

# AMERICAN FORESTRY

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## CAN AND CANNON; DRIER AND DREADNAUGHT

BY NORMAN C. MCLOUD

**I**NSPIRED by the success of the Home Gardening campaign the Conservation Department of the American Forestry Association is now coöperating with the National Emergency Food Garden Commission in giving attention to the proper handling of the national abundance produced by 2,000,000 or more food gardens. In this work lies Conservation in its highest form. Production is but the first step in the fight against possible war-time scarcity of food. The next step is to insure the wisest and best use of nature's abundance. Waste must be eliminated. Every pound of foodstuffs must be utilized for food. In no other way can the nation reap full reward for the labors of its Home and Community Gardeners. To do this calls for Home and Community Canning and Drying on a national scale. To bring this about is the present aim. In this movement there is need for help from the individual membership of the American Forestry Association. By spreading the gospel of Food Thrift, by encouraging the people of their communities to can or dry all vegetables and fruits that can be canned or dried, and by helping to give the widest possible circulation to the Canning and Drying Manuals issued by the Commission the members of the Association will be making constructive contribution to the cause of Food Conservation.

**F**OOD Conservation by Canning and Drying in the homes of America is the object of a nation-wide campaign now being conducted by the National Emergency Food Garden Commission of Washington, D. C. In coöperation with the Conservation Department of the American Forestry Association the Commission has been instrumental in causing the most remarkable Home Gardening movement the world has ever known. Comprehensive survey of the country has enabled the Commission to announce that more than two million food gardens have been planted and cultivated this year. Most of these were on ground on which no planting had been done in the past. The estimated value of the crop is over \$250,000,000. The present aim is to insure the wisest and most effective use of the vast surplus of garden stuff created on this newly discovered planting area.

Even a small garden plot will produce more vegetables than the average household can consume during the growing season. This is Nature's way of providing for the future. It is no part of Nature's scheme of things that the surplus should go to waste. The obvious intent of summer's over-abundance is that it should be converted

into an unfailing source of supply for the needs of the winter. To do this calls for an army of Home Canners and Home Driers. These are as important as the army of Home Gardeners. In some respects they are even more important. For this reason an urgent summons has gone forth drafting the Soldiers of the Soil to the battle against waste. The can is as much needed as the cannon; the drier is as important as the dreadnaught or the submarine.

The battle cry of the home gardening movement was for food "F. O. B. the Kitchen Door." The new call is for food "F. O. B. the Pantry Shelf." Unless garden products are saved for winter use much of the labor of the Home Gardeners will have been for naught. They will have had the benefit of summer enjoyment of their

food products, but they will miss the greater benefit that comes from providing for the winter. With appetites adjusted to the unprecedented abundance of this year's growing season, American families can ill afford to go into the winter months without provision for a liberal supply of the vegetable products that have contributed so much to their summer enjoyment and physical health. Pal-



CARROTS FOR THE WINTER

When sliced lengthwise and properly dried, carrots appear as here pictured. Their appetizing appearance is enough to convert any household to the movement for food conservation by Drying and Canning in the home.

ates trained to home-grown vegetables, and pocket-books trained to the money saving made possible by Home Gardening, will find the sting of winter sharpened if they fail to save everything that can be saved. To effect this saving means that we must Can all food that can be Canned or Dry all food that can be Dried.

As a result of modern methods, vegetables and fruits canned at home closely resemble the products in their natural state. With most of them no cooking is required in preparing them for winter storage. The single period, cold-pack method, as developed by latter-day science, reduces home canning to its simplest terms. The name of the method indicates its simplicity. The vege-

kitchen oven or just above the top of the stove. In this way even so small a quantity as a handful of peas, a few sweet potatoes, or even a single turnip may be prepared for the winter. This affords an effective means of food thrift in that it makes possible the saving of left-overs. If small quantities are thus treated from day to day the household will be surprised at the ease with which a considerable quantity may be accumulated.

Drying operations on an even larger scale may be conducted with outfits made at home. A tray, consisting of strips of wood with galvanized wire bottom, may be used over the stove or in the sun. In a still simpler form this tray may be made of a piece of galvanized wire



CANNING ENTHUSIASM KNOWS NO AGE LIMITS

This is a picture taken at a canning demonstration in a school house. The demonstration was conducted by official leaders in coöperation with the school authorities. By no means all the enthusiasts here pictured are school children. In the group may be seen many of an older generation. All of those in the audience are eagerly seeking expert counsel and direction as to home canning.

tables or fruits are packed cold and uncooked. Vegetables are covered with boiling salted water and fruits with hot sugar syrup. The jars are then sterilized in boiling water or steam, to kill bacteria and prevent spoiling, and the finished product is ready for sealing and storage. The simplicity of the process commends it to every household.

Drying is even simpler than canning. It may be accomplished with little or no expense for outfits or containers. The simplest form is sun drying. On hot, dry days sliced vegetables and fruits are exposed to the sun, on sheets of unprinted paper or lengths of muslin. This will give a perfect product, if care is taken to prevent exposure to insects and to rain or dew. Insects can be kept away by a covering of cheesecloth. Another simple form of drying is to place vegetables or fruits in the

netting with the edges turned up for an inch or two on sides and ends. More complete driers for cookstove use may be made at home with slight outlay, or they may be bought for as little as \$3.50. Driers of larger size and more conveniences may be had at prices ranging from \$16.00 to several hundred dollars.

In canning and drying the work may be done in the individual home or by groups of families. By forming a club and carrying on the work at a schoolhouse or other central place any number of households may purchase the most improved equipment at slight individual cost and have the advantage that arises from the use of the best facilities as well as having the benefit of neighborly rivalry. Community canning and drying are especially recommended as producing the best possible results.

The imperative need for Food Thrift was recognized

by the National Emergency Food Garden Commission months ago. Anticipating the vast production that would result from its campaign for the planting of Home Gardens, the Commission began its propaganda for canning and drying before the first garden crops were harvested. The campaign has been conducted with the same nation-wide organization that made the gardening campaign so successful. It is now in full swing and will be continued throughout the season with a persistence and thoroughness that will cause it to reach practically every household in the United States.

As a part of the campaign of Home Education in saving food products for winter use, the Commission has issued two booklets for general distribution. One of these is the Home Canning Manual, giving detailed instructions for the conservation of vegetables and fruits by the single period, cold-pack process. In this pamphlet are embodied the results of research work by recognized experts, and every effort has been made to have the manual a complete guide to canning operations in the home and in community clubs. The companion booklet is the Home Drying Manual, intended to serve the same purpose in connection with the drying process. In this pamphlet explicit directions are given for the preservation of a large variety of vegetables and fruits by sun drying, by the use of artificial heat, and by the use of the electric fan. Directions for pickling and for storage are also included.

These manuals are similar to the Home Gardening Primer issued by the Commission during the planting season, several hundred thousand copies of which have been distributed throughout the United States. Copies of the Home Canning Manual and the Home Drying Manual may be had upon request from the offices of the National Emergency Food Garden Commission at 210-220 Maryland Building, Washington, D. C. Two cents for postage should be enclosed with each request for one of these booklets. There is no charge for the manuals themselves.

The publication of these manuals is only a part of the campaign of education. As was the case in the

gardening campaign, the Commission is conducting a national school in coöperation with newspapers all over the country. Daily lessons in canning and drying are furnished these newspapers and are being printed in nearly two thousand publications.

As a result of this splendidly organized educational work, no household will have an excuse for failure to do its share in the conservation of the nation's food supply. All information needed to make expert canners and driers of the people of America is available through the medium of the manuals and the daily lessons published in the newspapers. The intention of the Commission is that no household shall be overlooked.

Everybody is

needed in the army of canners and driers. Every request for a booklet will be cordially welcomed and every possible encouragement afforded those who are ready to do their share in the great fight against the waste of food.

From every part of the country and through countless channels comes proof that America is already deeply stirred over the food question. Prices for everything that enters into the daily diet of a hundred million people are abnormally high. With this condition prevailing during the season of production, it is evident that the winter months will bring widespread hardship unless due heed is given the imperative demand for thrift in the use and saving of Food.

The battle cry of Food Thrift is directed to every household in America. Its urgency should be impressed on every good citizen, regardless of age, sex, or condition. Those who have done canning and drying in the past should this year engage in these activities on a larger scale than ever before. For those who have not done these things in the past, wartime is the time to begin. Never again will the American Home have the same opportunity to serve the American Nation.

To become a canner or drier of vegetables and fruits it is not necessary that one should be a home gardener. For those who have their own gardens, of course, the



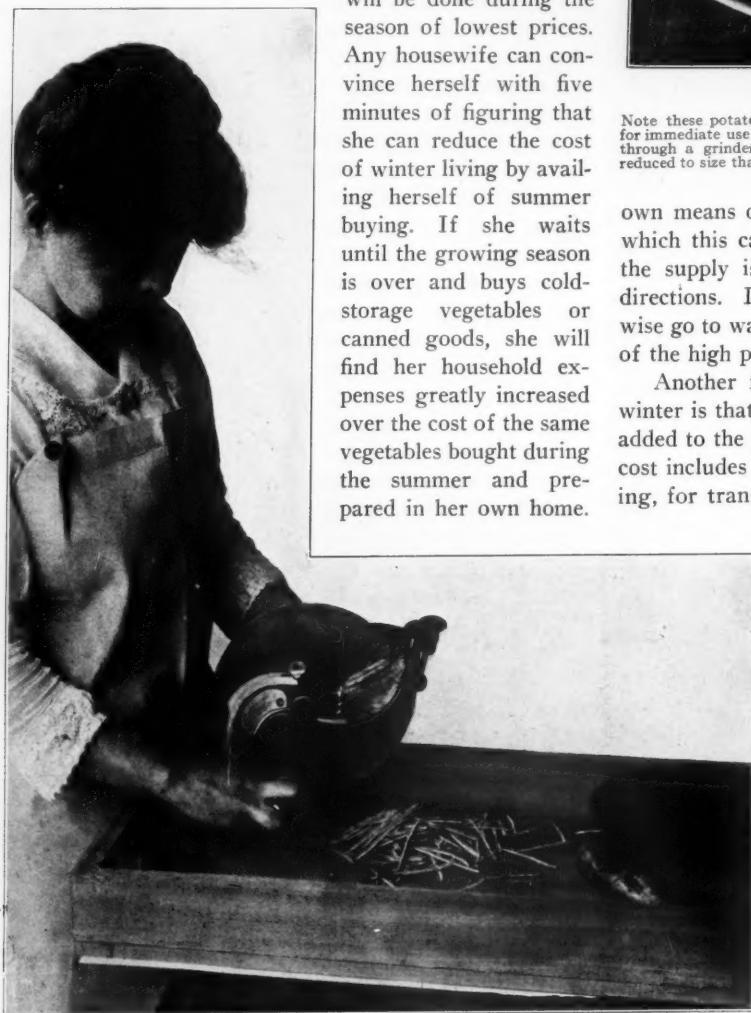
COMFORT AND UTILITY

By the use of the electric fan it is possible to achieve excellent results in drying vegetables and fruits. The picture shows trays stacked in front of the fan, with the air current directed lengthwise in relation to the trays. The method is extremely simple.



matter of summer preparation for winter food supply is already partly solved. With an abundant supply of green stuffs of their own raising, they are independent from the very outset. To non-producers, however, the call for canning and drying is in no measure less urgent. Even though they must buy their vegetables and fruits for canning, they will find that the money saving will be very large, for the reason that the buying

will be done during the season of lowest prices. Any housewife can convince herself with five minutes of figuring that she can reduce the cost of winter living by availing herself of summer buying. If she waits until the growing season is over and buys cold-storage vegetables or canned goods, she will find her household expenses greatly increased over the cost of the same vegetables bought during the summer and prepared in her own home.



AT HOME WITH A ROTARY SLICER

The housewife in this picture is preparing sweet potatoes for the drier, with the aid of a rotary slicer. She has already cut the potatoes into slices and is now cutting these slices into strips, with the same machine.

Various causes contribute to this increased cost. Not the least of these is that the winter supply of storage goods and canned products lacks competition with the fresh products. With all merchandise the markets are ruled by the laws of supply and demand. In the growing season the supply is so great as to keep prices at the lowest level. During the winter, when production is stopped, the canned goods and the storage goods have the market to themselves. That prices should then be much higher is one of the plainest truths of economics. For this reason the individual household must provide its



POTATOES THAT APPEAL

Note these potato strings and imagine how you would like them stored away for immediate use at any time during the winter. They have been cooked, passed through a grinder and then dried. By elimination of the moisture they are reduced to size that takes little storage room.

own means of furnishing competition. The one way in which this can be done is by canning and drying while the supply is plentiful. To do this is helpful in two directions. It utilizes the vast surplus that would otherwise go to waste, and it makes the household independent of the high prices of the winter season.

Another factor making for higher prices during the winter is that divers intermediate charges and profits are added to the price before they reach the consumer. The cost includes the charges for cold storage, for warehousing, for transportation, for distribution, and for many other phases of commercial necessity, to say nothing of the interest and dividends which must be earned on the invested capital of every agency concerned in preparation, distributing and selling. With vegetables and fruits canned at home even the non-producers are freed from the tax properly placed on winter purchases. They pay for no handling except that connected with the market operations of the fresh supply. From the various charges and profits connected with goods bought during the winter they are entirely immune. In this they are on even terms with the home gardeners after the first cost of the green stuffs.

Of similar importance is the national need for reducing the strain on the transportation facilities of the country. With the vast shipments of munitions and countless other forms of war merchandise now taking place, the railroads are already strained beyond their powers. With the approach of winter this strain will be tremendously increased. Authorities agree that next winter will see freight congestion throughout America on a more appalling scale than has ever been experienced. The importance of this in its relation to food supply can not be overemphasized. If the homes of America permit themselves to face the winter with their usual dependence on the corner grocery and the storage warehouse for their foodstuffs they will be inviting tragedy in the form of high prices and





AN ARGUMENT IN FAVOR OF DRYING

Nothing could be more inviting than this plate of foodstuffs prepared for drying. This shows the results to be achieved, as to uniformity and appearance, by using a mechanical device for preparing shreds or strips of vegetables.

shortage. If they engage in a drying and canning campaign of preparedness they will be inviting independence, and at the same time they will be relieving the traffic situation. If twenty million families, or even ten million, are able to draw on their own storerooms for canned goods and dried products the relief to the traffic situation will be tremendous. So vital is the need for this relief that even if there were no question of preventing waste the urgent need for canning and drying would be enough to justify the stress now being placed upon them. With the double reason the requirement is such as to be the patriotic duty of every household. No family can afford to ignore this duty. No family can afford to be a food-slacker in this time of war.

Recognizing the tremendous need for canning and drying, the National Emergency Food Garden Commission, in its manuals on Home Canning and Home Drying, has laid great emphasis on the importance of these activities. This advice is fundamentally sound and is based on the knowledge and counsel of the nation's leading students of food conservation and the serious problems involved in the present situation. In its treatment of the subject the Commission has undertaken to drive home to every household and every good citizen the duty of the individual in connection with the food supply of the nation and its European allies. So tersely expressed are these arguments, and so irrefutable, that they are reproduced herewith.

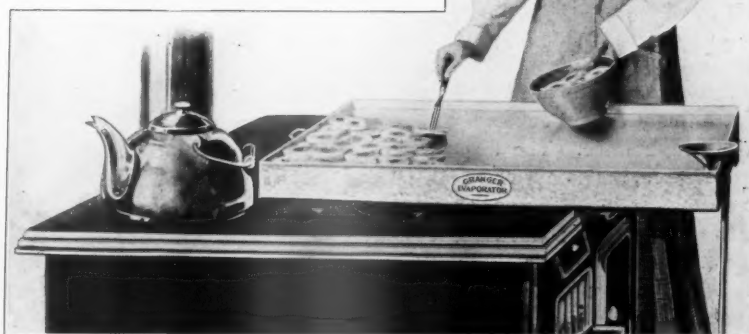
"To save vegetables and fruits by Canning this year is a patriotic duty," says the Commission in its Manual on Canning. "The war makes the need for Food Conservation more imperative than at any time in history. America

is responsible for the food supply of her European Allies. The American family can do nothing more helpful in this emergency than to Can All Food that Can be Canned. In this way the Abundance of the Summer may be made to supply the Needs of the Winter.

"To do this means the practical application of the principles of Food Thrift. It means the elimination of Waste. The situation demands that every American should do his share toward increasing the Food Supply of the World. It is time to begin starving the American Garbage Pail. It is time for every woman to enlist in the Army of Canners. It is time for the conservation of food."

In its introduction to the Manual on Drying, the Commission says:

"Drying vegetables and fruits for winter



EVAPORATOR FOR USE ON COOKSTOVE

The fair Conservationist in this picture is placing a tempting array of apple rings on an evaporator which she bought for \$6.00. This drying outfit rests on the kitchen stove and is supported at one end by a metal leg reaching the floor.

use is one of the vital national needs of wartime. As a national need it becomes a patriotic duty. As a patriotic duty it should be done in every family.

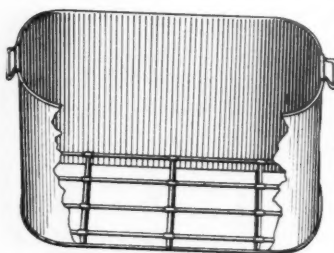
"Failure to prepare vegetables and fruits for winter use by drying is one of the worst examples of American

extravagance. During the summer nature provides an over-abundance. This year, with the planting of 2,000,000 home food gardens, stimulated by the National Emergency Food Garden Commission, this abundance will be especially large. The excess supply is not meant to go to waste. The over-abundance of the summer should be made the normal supply of the winter. The individual family

#### THE BATTLE AGAINST WASTE

**W**AR-TIME Food Gardens have already given us an abundance of vegetables "F. O. B. the Kitchen Door." None of these must be wasted. Every household must enlist in the useful army of Food Canners and Food Driers. The Can is as much needed as the Cannon; the Drier is as important as the Dreadnaught or the Submarine. Their importance must not be overlooked. If we use them as we should our immediate food abundance "F. O. B. the Kitchen Door" will be transformed into a winter food supply "F. O. B. the Pantry Shelf."—CHARLES LATHROP PACK.

should conduct drying on a liberal scale. In no other way can there be assurance that America's food supply will meet our own needs. In no other way, surely, can we answer the enormous demands made upon us for furnishing food for our European Allies.

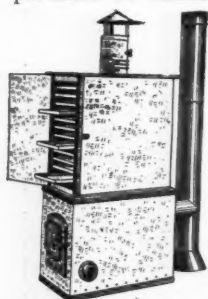


WHAT EVERY HOME HAS

This is an everyday family wash-boiler. By inserting a rack of light wooden strips, an inch from the bottom, its owner has made it into a perfect hot-water bath for home canning by the cold-pack method. The jars are subjected to heat in this boiler and the contents require no cooking.

"The reckless extravagance of living from hand to mouth has become a national trait. Too frequently to-day's order from the grocer is for to-day's needs. The needs of to-morrow and next winter are left to take care of themselves. This results in heavy loss of food products during the growing season, when they are plentiful, and high prices during the winter when production is stopped. Winter buying of vegetables and fruits is costly. It means that you pay transportation, cold-storage and commission merchants' charges and profits. Summer is the time of lowest prices. Summer, therefore, is the time to buy for winter use.

"Every pound of food products grown this year will be needed to combat Food Famine. The loss that can be prevented, the money saving that can be effected and the transportation relief that can be brought about make it essential that every American household should make vegetable and fruit drying a part of its program of Food Thrift. The results can be gained in no other way. Vegetable and fruit drying has been little practiced for a generation or more. Its revival on a general scale is the purpose of this manual. There is no desire to detract from the importance of canning operations. Drying must not be regarded as taking the place of the preservation of vegetables and fruits in tins and glass jars. It must be viewed as an important adjunct thereto. Drying is important and economical in every home, whether on the farm, in the village, in the town, or in the city. For city dwellers it has the special advantage that little storage space is required for the dried food. One hundred pounds of some fresh vegetables will reduce to 10 pounds in drying without loss of flavor or food value.



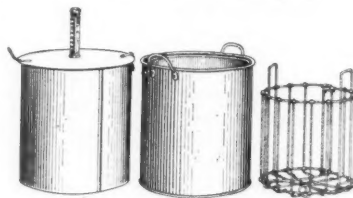
FOR HOME DRYING

This is a type of drier manufactured for home use. It may be bought either with or without its furnace, and used on top of the ordinary kitchen stove.

"This year's need for vegetable and fruit drying is given added emphasis by the shortage of tin for the manufacture of cans. This condition has created an unusual demand for glass jars. For this year, therefore, drying is of more than normal importance.

Dried products can be stored in receptacles that could not be used for canning."

The storage of vegetables in their natural condition is treated by the Commission as an important adjunct to canning and drying. Potatoes, beets, carrots, parsnips, salsify, turnips, cabbage, celery, onions, sweet potatoes, dry beans, and dry lima beans may be so stored.

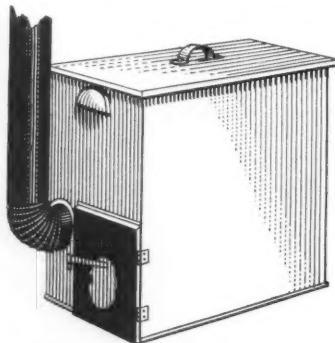


CANNING MADE EASY

A simple type of canner for use in the cold-pack method. This is known as a water-seal outfit and consists of cover, with thermometer, a holder for jars or cans and a basket-crate for ease in handling the containers. It is used on the top of a kitchen stove.

In a house heated by a cellar furnace, partition off a small room. It is best to have in it at least one outside window for temperature regulation. An earth floor is desirable. In this room may be stored potatoes, beets, carrots, parsnips, turnips, and salsify. Put them in bins or in boxes, baskets or barrels. The vegetables should be harvested when the ground is dry and should lie out-doors until any moisture on them has evaporated. Remove the tops from beets, turnips, carrots, and salsify.

For out-door storage make a pit 6 or 8 inches deep and as large as needed, in a well-drained place. Line this with straw, leaves, or similar material, and place the vegetables on this lining in a conical pile. Cover the vegetables with straw, leaves or something similar and cover this with enough earth to prevent freezing. It is well to make several small pits rather than one large one, for the reason that when a pit has been once opened the entire contents should



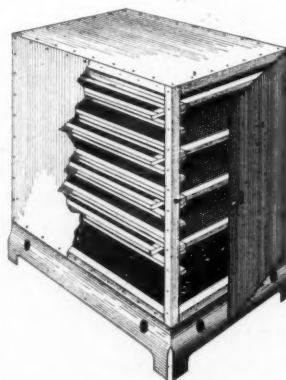
A CANNER FROM THE STORE

The canner here pictured is for use in the cold-pack method of canning. It has its own furnace, a vat for holding jars, a smoke pipe and a cover. There are several makes of this type of canner and they are efficient and not expensive.

be removed. This form of storage is used for potatoes, beets, carrots, turnips, parsnips, cabbage, and salsify. It is well to store several varieties of vegetable in one pit, for convenience in winter use.

For cabbage the pit should be long and narrow. The cabbages are placed in rows with heads down and covered with dirt. The removal of a portion of this supply does not disturb the remainder. Cabbages may be stored in the cellar in boxes or barrels of earth or sand.

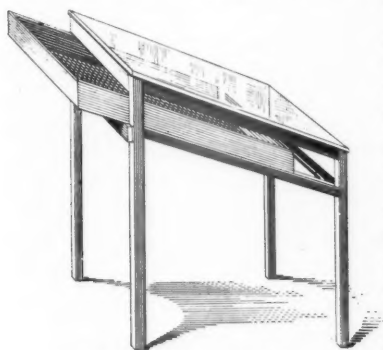
Briefly summarized, America is now in the midst of its year of greatest plenty in the production of garden truck. Emergency food gardens have changed the entire



USEFUL COOKSTOVE DRIER

The type here pictured is made at home or may be bought already made. It has galvanized iron sides, a series of trays and a swinging door. It is used on top of the kitchen stove and is highly efficient in drying vegetables and fruits.

face of the national landscape. Complete transformation has been wrought in the American backyard and vacant lot. In the past these areas were waste places whereon the chief fruitfulness was dilapidated tinware. Discarded tins from the corner grocery were a standard crop, perennial, unfailing, and in perpetual bloom. To-day the waste places flourish with the abundance of nature. Instead of tomato



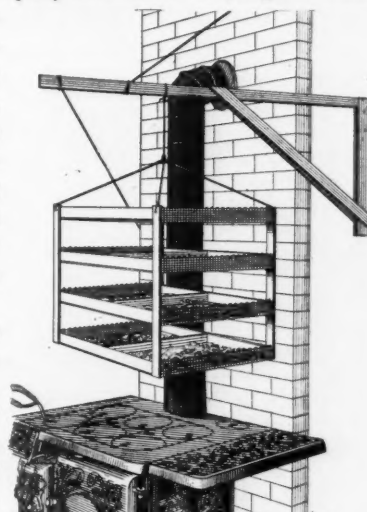
HOMEMADE SUN DRIER

A simple form of construction is used in this drier and the ease with which it may be made is out of all proportion to its great value. The sloping glass top exposes the contents to the sun. The tray for holding vegetables or fruits is made of strips of wood with galvanized wire mesh bottom.

has its crop of tomatoes. For unnumbered tins we have substituted foodstuffs in unmeasured tons. With the advent of the season for canning and drying we must carry the transformation one step further. For the discarded tins we must now substitute cans and jars filled with an abundance of our own making. Now that we have taken the cans from the backyards we

must place their brethren on the pantry shelf as component parts of a company of holders carrying our food supply for the winter. The food garden has already given us food "F. O. B. the Kitchen Door." Our canning and drying operations must give us winter abundance "F. O. B. the Pantry Shelf."

In this campaign F. O. B. has a double meaning. To the student of economics it means delivered free of charge. To those who realize the need for an abundant food supply for the allied armies its meaning is "Feed Our Boys." That this meaning will be met with indifference and neglect is not to be believed.



ONE FORM OF DRIER MADE AT HOME

This drier makes possible highly effective vegetable and fruit drying and its simplicity is such that it may be made at home with little trouble. It consists of a series of trays supported by light framework. The bottoms of the trays are of galvanized wire mesh. It is to be used over a stove.

#### A WATCHFULLY WAITING RODENT

By Lewis Edwin Theiss

**W**E were trout fishing. Noon came and with it the call of Nature. We looked about for a suitable place to eat. Near the stream was an opening in the forest. A giant tree had fallen, making a great hole in the leafy canopy. Through this hole in the forest roof, the sun streamed down warm and grateful, for it was a chilly day in early spring. The tree lay prone in the center of the patch of sunlight. We put our lunch on its trunk and seated ourselves astride the tree, facing each other, the lunch between us.

Twenty-five feet distant rose a tuft of tall grass, near some underbrush. The grass was a vivid, fresh green. All about it were the sere, brown leaves. This splash of bright color caught and held the eye. And as we looked at it, one of the graceful stalks of grass trembled, waved fitfully, and disappeared. The remainder of the grass stalks were as motionless as the painted ship of poetic fame. We watched. Presently a second stalk quivered, shook, and fell. In due season another vanished. Yet not another thing stirred.

Intently we watched. One after one the grass stalks disappeared; and when the clump was sufficiently thinned, we saw the cause of it all. A sleek, little woodmouse

was cutting these grass blades one by one and dragging them into her nest to line it.

The entrance to the nest was the familiar little opening under the brown leaves. So unsubstantial was this leaf roof that we could even trace the mouse's movements underground, by the slight motion of the leaf-mold.

For perhaps fifteen minutes we watched this little creature in silence. Blade after blade of grass disappeared. Then no more fell for a time. Then the harvesting was resumed, only to be interrupted again. What was the mouse doing in these hiatuses? We watched intently.

Suddenly, near at hand, two button-bright eyes and a brown nose popped out from under the leaves, regarded us a moment, and disappeared. The grass cutting was resumed. Presently it stopped. We watched closely. Many feet away the same brown head suddenly appeared above the forest floor. It watched us for a moment, then withdrew. And again the haying continued. So it went on throughout our entire lunch period—which we purposely prolonged. A dozen tunnels led to the grass-lined nest, and at every one the little mouse took a squint at us, then went on with her work. Presently we withdrew quietly. We had learned how the mouse kept watch of us. We went away wondering how the trout managed it—for our creels were empty.

**N**EVER backfire against a forest fire from the bottom of a mountain. You may burn up some of your own party if you do. Go to the top and work down the hill.

**I**F you are burning resinous wood, such as pine, and your chimney becomes clogged with soot, throw a few pieces of sheet zinc on the fire.



## FOREST REGIMENT OFF FOR FRANCE

THE roster of commissioned officers in the "forest regiment," or, as the War Department designates it, the Tenth Reserve Engineers (Forest), has just been announced and includes two regular army officers, 15 foresters from the U. S. Forest Service and two from the Forest Branch of British Columbia, one lumberman from the Indian Forest Service, and 13 foresters and lumbermen taken from private or institutional work.

The War Department has designated Lieutenant Colonel James A. Woodruff of the Engineer Corps to organize and command the regiment, and Beverly C. Dunn, Captain of Engineers, as Adjutant. W. B. Greeley, now Assistant Forester in charge of the branches of silviculture and research, U. S. Forest Service, and formerly district forester in charge of the National Forests of Montana and Northern Idaho, has been selected to serve as Major on the regimental staff and to aid in the organization and equipment of the regiment. The remaining officers will be as follows:

Majors in command of battalions: R. E. Benedict, assistant forester in the Forest Branch of British Columbia, and C. S. Chapman, manager of the private timber protective associations of Western Oregon.

Captains: Edward S. Bryant, forest inspector, U. S. Forest Service, stationed at Washington, D. C.; Inman F. Eldredge, forest supervisor of the Florida National Forest, stationed at Pensacola, Florida; J. D. Guthrie, forest supervisor of the Coconino National Forest, stationed at Flagstaff, Arizona; Evan W. Kelly, forest examiner, U. S. Forest Service, stationed at San Francisco; John Lafon, assistant forester in charge of timber operations, Forest Branch of British Columbia; David T. Mason, professor of forestry at the University of California; W. N. Millar, professor of forestry at the University of Toronto; Barrington Moore, a private forester from New York City; Arthur C. Ringland, forest inspector, U. S. Forest Service, stationed at Washington, D. C.; Dorr Skeels, logging engineer and professor of forestry at the University of Montana. The three captains taken from university professorships are, it is stated, chosen because of their extensive past experience in practical lumbering and other woods work.

First Lieutenants: Ridsen T. Allen of the Allen-Medley Lumber Company, Devereux, Georgia; M. S. Benedict, forest supervisor of the Sawtooth National Forest, stationed at Hailey, Idaho; Robert L. Deering, forest examiner, U. S. Forest Service, stationed at Albuquerque, N. M.; Clarence R. Dunston, lumberman, U. S. Indian Service, stationed at Dixon, Montana; D. P. Godwin, forest examiner, U. S. Forest Service, stationed at San Francisco; J. G. Kelly, lumberman, of Portland, Oregon; Eugene L. Lindsay, forest examiner, U. S. Forest Service, stationed at Washington, D. C.; E. C. Sanford, forest supervisor of the Idaho National Forest, stationed at McCale, Idaho; H. C. Williams, who recently resigned from the supervisorship of the same forest; Stanley L. Wolfe, forest examiner, U. S. Forest Service, stationed at Washington, D. C.; J. B. Woods of the Arkansas Land and Lumber Company, Malvern, Arkansas; Herman Work, deputy forest supervisor of the Caribou National Forest, stationed at Montpelier, Idaho.

Second Lieutenants: H. R. Condon, forester with the Pennsylvania Railroad, Philadelphia; S. H. Hodgman, logging camp foreman with the Potlatch Timber Company, Potlatch, Idaho; W. H. Gallaher, forest examiner, U. S. Forest Service, stationed at San Francisco; J. W. Seltzer,

forester with the New Jersey Zinc Company, Franklin, New Jersey; H. B. Shepard, forester with the Lincoln Pulp Company, Bangor, Maine; E. F. Wohlenberg, forest examiner, U. S. Forest Service, stationed at Flagstaff, Arizona.

Recruiting for the rank and file of the regiment is actively under way. The enlisted men will be picked woodsmen. With only two thousand men needed out of the vast number of woods workers which the lumber industry of the United States employs, and with rapid recruiting necessary, a special machinery has been developed to handle the preliminary stages of enlistment. Local representatives of the Forest Service in various parts of the country and a number of State forestry officials have been designated as "listing officers" to secure applications from men in their neighborhood who are known to be of the right type. By this "still hunt" method it is believed that an efficient force can be gathered much more successfully than by encouraging a large number of miscellaneous applications which could not be thoroughly sifted without a great deal of effort. Great care will be used to secure men proficient in woods work.

The regiment will convert available timber behind the battle lines in France into railroad ties, trench timbers, mine props, bridge timbers, lumber, and cordwood needed in the military operations of the British Army. The work may, it is stated, fall within the danger zone and will be done largely in sprout forests of oak, beech, hornbeam, and other hardwoods, with some stands of pine. The timber is small in comparison with most American forests, much of it from 8 to 12 inches in diameter. These forests resemble the woodlots of southern New England, and the operations will be similar to portable sawmill logging and tie cutting in Massachusetts, Connecticut, Maryland, and Virginia. The larger logs will be sawn into boards and dimension material, while the smaller trees will be cut into hewn ties, poles, props, etc. The closest possible use of timber will be required.

The French forests have for many years been managed with great care and skill. It is the view of the Government's forestry officials that if the American forest regiment is to do creditable work, it must be able not only to cut and manufacture the timber with high efficiency, but also to avoid waste and leave the forests in good shape for future production. This is the reason for selecting mainly trained foresters as officers.

The regiment will be made up of six companies of 164 men each, aside from battalion and regimental staffs, drivers, and commissioned officers. It will be sent overseas as soon as organized, trained and equipped. It will first be assembled at two training camps, the regimental headquarters, and one battalion at the American University, Washington, D. C., and one battalion at Fort Leavenworth, Kansas.

Enlistment is for the period of the war. Recruits must be between the ages of 18 and 40 and must be citizens of the United States or have declared their intention to become such. They are subject to the same physical examination as that required for other military service.

While designed to serve primarily as a mobile logging and milling crew, the regiment will be organized on military lines and its members will be uniformed and armed like other units in the United States Army. The first duty of its officers and men will be to learn military discipline and teamwork through thorough-going drill at training camps.

For the logging crews skilled axemen, sawyers, tie hewers, skidders, teamsters, and blacksmiths are being enlisted. Millwrights, sawyers, and engineers are to man portable sawmills which will form part of the equipment, while suitable helpers for the various activities connected

with woods operations and the maintenance of large camps will be picked up.

The prompt recruiting of this regiment will, it is expected, enable it to be among the first to carry the flag of the United States abroad.

## FORESTER GRAVES IN FRANCE

**A**NNOUNCEMENT of the arrival of Henry S. Graves, Chief of the U. S. Forest Service in Paris, has led the Department of Agriculture to explain that Mr. Graves has gone abroad to make arrangements for the forest work which the American army engineers will undertake in France in connection with the military operations of the Allied forces.

Because of the opportunity for service by this country in woods work incidental to the war which the request of the British Government for the sending of a forest regiment was believed to present, Mr. Graves has been granted leave of absence from his position as head of the Forest Service and has received a commission as Major in the Reserve Engineer Corps. He has not been assigned to any command, but is acting under instruc-

tions, it is stated, to proceed to France in order to learn on the ground in advance just what conditions will need to be met, what equipment will be called for, and how extensively the services of American lumbermen can be utilized to advantage. Meanwhile the recruiting of the regiment which has already been asked for is being pushed by the Forest Service and is said to be advancing rapidly.

One of the staff officers of the regiment, Captain Barrington Moore, is with Mr. Graves for the purpose of arranging for its prompt assumption of the specific duties to which it will be assigned when it is landed in France. While organized on military lines, the work of the regiment will be industrial, not combatant. It will operate in the woods behind the armies, getting out timbers, ties, and lumber required for military purposes.

## LUMBER FOR WAR-TIME USES

**T**HE lumber committee of the advisory commission, Council of National Defense, estimates that 2,000,000,000 feet of lumber may be used for purposes directly connected with the war in the next twelve months.

The committee now is given to understand that provision will be made at each camp for anywhere up to 40,000 men, instead of the 25,000 originally planned. This may be due to the decision to call for 125,000 men to serve as a reserve for the first 500,000 men drafted for the new national army.

Second in quantity of lumber required comes the wooden shipbuilding program, which the committee estimates will require about 400,000,000 feet of lumber.

In a statement the committee says:

"The best estimate that can be made of the total amount of lumber required for purposes of national defense within the next twelve months is 2,000,000,000 feet. This sounds like a colossal figure, and it is a big figure, but should give no apprehension that it will disturb the markets or cause a shortage of lumber. Actually this will not exceed 5 per cent of one year's lumber production of this country."

Here are some more lumber requirements seen by the committee: Structures for training camp purposes for the navy, 200,000,000 feet; aviation school cantonments, 120,000,000 feet; erection of 200 buildings at army and navy training camps by the war work council of the

Young Men's Christian Association, 6,400,000 feet; packing boxes and crates for the army and navy, at least 200,000,000 feet; army wagons, 25,000,000 feet; gunstocks, 10,000,000 feet; material for 3,500 aeroplanes, 3,500,000 feet.

Army cots, tent poles, automobiles, artillery, cooerage, furniture, docks and piers, trench lining, saddles, mine timbers, tools, railroad construction, and the lumber necessary in building factories will go to largely swell the total.

The special committee representing the Southern Pine Association here has issued this formal statement:

"The committee representing the Southern Pine Association, acting for the Southern Pine Emergency Bureau, announced to-day that an order for 100 ships to be sawed by the southern mills has been placed by Gen. George W. Goethals, general manager of the United States Shipping Board Emergency Fleet Corporation, at an average price of \$35 a thousand feet at the mills. The Southern Pine Association has asked those mills which can do so to manufacture the timbers required for wooden ships, and a large number of them have bound themselves to furnish complete schedules at the price named for delivery at such shipyards as may be designated by the Government.

"General Goethals has accepted this proposition, to the extent of 100 units (ships), comprising approximately 140,000,000 feet of lumber."

**I**NSTEAD of planting a horse-chestnut, why not plant a real nut tree? Pecans, hickories, or English walnuts cost very little more than horse-chestnuts, make less litter and produce a valuable crop.

**M**APLE sugar season is over. It ended when the first leaves unfurled, the sap then becoming less sweet. Seventy drops of sap per minute flow from good trees, and twenty-five gallons of sap make about five pounds of sugar.

## LUMBER FOR AN ARMY CANTONMENT

**T**HIS is the story of the use of lumber in an army cantonment, and of the manner in which the American Logging Camp has been copied for regular army uses, in the building of quarters for the Reserve Officers' Training Camps. When the letters R.O.T.C. are seen, this is the interpretation. There are two camps at Fort Sheridan, each of 2500 men, roughly, one camp for Illinois and one for Wisconsin and Michigan combined. Each camp is organized in fifteen companies of about 160 men. Wisconsin and Michigan are in permanent barracks except for four companies which, with the Illinois regiment, are quartered in cantonments on the south side of the reservation. There are quarters for two emergency companies with the four Wisconsin-Michigan companies, making a total of twenty-one companies quartered in the newly-erected wooden cantonments.

The quarters for each company are four buildings, placed end to end with a twenty-foot space between each. On the south is the mess hall, with a kitchen and two tables the length of the building, *à la* lumber camp, bench seats on each side of each table. The next two buildings are the quarters, with cots in each, for eighty men. North of these two is a bathhouse.

The speed of construction of the camp was notable, and a most striking evidence of the ability of the typical American business man to meet emergencies. The contract for the construction of the buildings was awarded to the Sumner Sollitt Company, Chicago, on Saturday evening, April 28. About noon on Sunday, April 29, the Edward Hines Lumber Company, of Chicago, received the order for the material, amounting to a total of some 1,400,000 feet. During the afternoon 5 auto-truck loads of lumber were dispatched to Fort Sheridan to provide quarters for the working force engaged on the job. At 5 o'clock in the evening a train of 50 empty cars was on track in the yards of the lumber company. The entire train was loaded with the 1,400,000 feet on April 30 out of the stock of Northern, Southern and Western lumber carried on hand. The contract called for all dressed lumber. The most remarkable part of the operation, therefore, was that some 400,000 feet of the shipment was run through the planing mills of the lumber company, as well as being loaded on the cars in the same day.

The Chicago and North Western Railroad delivered the trainload of lumber at Fort Sheridan on Tuesday morning, May 1. The Sumner Sollitt Company had its construction force on the ground equipped with gasoline saws and all other devices for quick work. Ohio National Guard Engineers staked out the company streets and buildings. The job was finished on May 10, in just ten working days, using only one shift of men per day. The largest number of men employed on the job at one time was 785. Here is what they built complete, ready for occupancy:

42 barracks, 20 x 126 feet each.

21 mess buildings, 20 x 110 feet each, equipped with tables and benches built in regular logging camp style.

21 lavatory buildings, 16 x 63 feet, equipped with toilets, shower baths, etc.

1 postal exchange building, 20 x 30 feet.

1 telephone exchange building, 20 x 33 feet.

This is the story of one of the camps where officers will be trained for the new army and is duplicated in many other camps throughout the country, as there are fifteen reserve officer training camps in the country, requiring quarters for 35,000 prospective officers. The regular permanent barracks do not begin to provide room for all these men. This story of the Fort Sheridan camp is that of all other camps where cantonments are being built, and will be duplicated on a larger scale to provide quarters for the new army of 500,000 men called out September 1.

## OAK TREE FOUNTAIN

By H. E. Zimmerman

**F**ROM the picture one would judge that this drinking fountain at Mount Lowe, California, has its source of

supply in the heart of an oak tree. Some years ago there was a cavity in the heart of the tree. A hole was bored through to the cavity and a water pipe from the mountain stream connected, as shown in the illustration. Later, modern tree doctors filled the cavity, and now the bark has grown over, completely hiding all traces of the operation. Moving-picture companies have used the fountain in films, depicting the quack doctor and his wonderful health restorer, "The elixir of life, or the blood of the oak."



**R**EPORTS compiled by the paving block bureau of the Southern Pine Association show that the wooden block, properly creosoted, is rapidly becoming the vogue all over the country, and popular wherever it has been tried.

The statistics of production by the redwood manufacturers of California show a material increase for 1916, as compared with 1915, but considerably smaller than several recent years.



## THE EXTENSION OF NATIONAL FORESTS IN COLORADO

By HERMAN H. CHAPMAN

TEN years ago opposition to the National Forest policy in Colorado reached such proportions that the State demanded and secured from Congress a law which took from the President of the United States the power, given him in 1891, to proclaim new National Forests within the State. Five other States were also included in this measure, namely, Wyoming, Idaho, Oregon, Washington, and Montana.

To-day the people of northern Colorado have petitioned and secured from Congress a law permitting the President to increase these same National Forest areas by the addition of over half a million acres of land. No incident in the entire history of the struggle between nationalism and States rights as applied to our western public lands so emphasizes the growing understanding and approval with which the National Forest adminis-

tration is regarded as this complete reversal of attitude on the part of a State which has been conspicuous in the past for the violence of its opposition and the broad and sweeping character of its attacks on the Forest Service policies. In fact, the insistence of the actual residents of the great agricultural district bordering the foothills of the Medicine Bow Mountains for an extension of the National Forests placed certain Colorado politicians in an embarrassing position, leaving them, so to speak, high and dry, and nullifying much fiery oratory and indignant declamation.

The opposition to National Forests in Colorado centered about the development of the publicly owned water-powers, and these interests are by no means converted to the idea of retention of government ownership and regulation to-day. From this group it spread to the

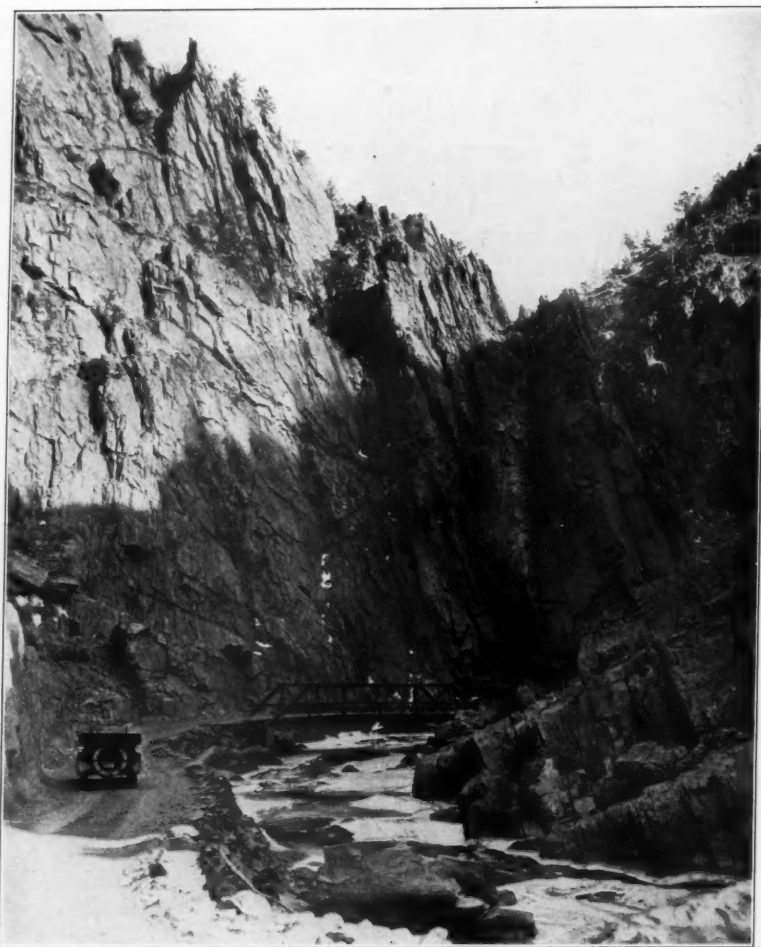


A BEAUTIFUL VIEW OF THE CANYON

Along the Estes Park road—a beautiful stretch typical of the scenery of the section which it is desired to include within the Colorado National Forest.

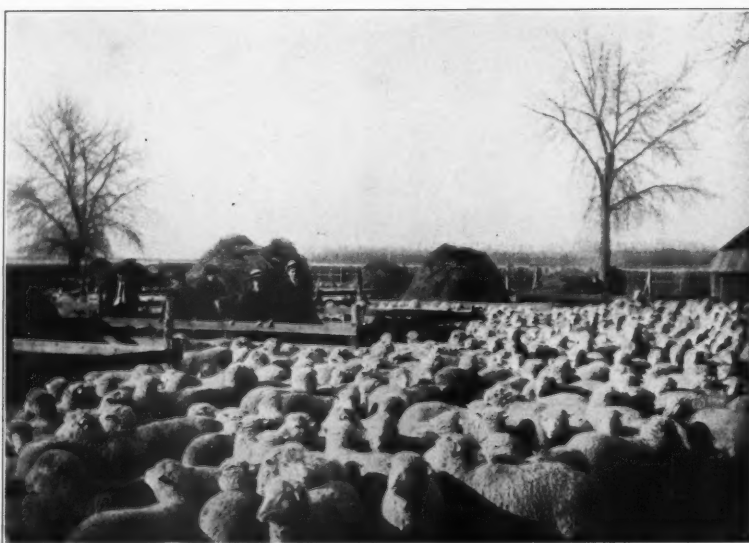
mining interests, who were persuaded to believe that the National Forests would in some way or other act as a drawback to the development of this industry. Since the location and working of the mines themselves is unobstructed, and has been permitted within the Forests since 1896, the miners were forced to concentrate their opposition on the timber policy of the National Forests. But here again they disagreed as to what constituted the real objections. Under the existing regulations, timber could be purchased from the Forests for the development of mines to any required amount. So one group of objectors claimed that timber lands included within National Forests were at once opened to wholesale and unrestricted exploitation by lumbermen and pole hunters, to the injury of mining and other local industries; while a second group still blindly insisted that the National Forests locked up all resources, including the timber, from any kind of development.

Meanwhile, the agricultural interests, dependent upon watershed



CANYON OF BIG THOMPSON RIVER AND LOVELAND

On the Estes Park auto road—a midwinter scene showing the Canyon and bridge.



GOOD UTILIZATION OF NATIONAL FOREST RESOURCES

These lambs from New Mexico, on the Henry Feit Ranch, are fattening on alfalfa raised locally by the use of irrigation water from the Colorado National Forest, and corn from Nebraska.

protection for the maintenance of irrigation on many thousands of acres of the richest lands of Colorado, discovered that the ruthless denudation of the foothills of the Medicine Bow range was diminishing the flow of water and causing great damage to irrigation. These foothills had not been included in the original withdrawals for National Forests—because at the time areas containing 15 per cent or more of patented or private land were not considered suitable for National Forest use, and this stretch of territory was honeycombed with mining and timber locations. In the very year 1907, in which the opposition succeeded in prohibiting the creation of any further National Forests by the President, petitions went to Congress from this region asking for this extension of the Forest area. During the last decade this demand has grown constantly stronger and better organized, until it embraced not only the commercial bodies of the foothill towns, the local livestock associations, and the representative agricultural organizations, but included

such bodies as the Boulder County Metal Mining Association, thus bringing the mining interests back into line for a measure formerly bitterly opposed.

And no wonder that pressure was brought to bear for this legislation. The region affected, which consti-

a million acres are irrigated from the streams heading in the Medicine Bow Mountains, and the crops produced are worth over \$10,000,000. Municipal water plants already represent over \$3,000,000 invested, with 20,000 horsepower developed and several additional plants under construction.

These are the communities whose insistent demand finally overcame the bitter opposition of States rights advocates and champions of unrestrained private exploitation. In 1916 a bill was introduced, which became a law in September of that year, by which the President was



NEAR THE COLORADO NATIONAL FOREST

This is taken on the Estes Park auto road, and shows part of the proposed addition to the Colorado National Forest. The forest and cliffs may be seen in the distance.

tutes the level plains bordering the foothills, is one of the richest orchard and farming communities in the State. Sugar beets, alfalfa, apples, and many grains are produced in abundance, provided only that the land receives water for irrigation. Boulder Creek, Left Hand, the St. Vrain, the Big and Little Thompson, and the Cache La Poudre are all utilized to the last bucketful in fostering the great agricultural wealth of the region. Many thriving towns are located on the plains close to the foothills, among which are Boulder, Ward, Estes Park, Longmont, Berthoud, Loveland, Lyons, Fort Collins, and Greeley, all of which get their domestic water supply from the streams flowing east from the Continental Divide across this foothills region. The sugar factories alone produced in 1916 an output of 319 million pounds of sugar from 86,000 acres of sugar beets, and the by-products, or refuse, from these factories fattened 25,000 cattle and over 1,000,000 sheep. More than half



OLD MAN RANGER STATION

This is one of the most picturesque stations in District 2. It is near Estes Park and on the proposed addition to the Colorado National Forest.

authorized by Congress to proclaim as National Forest land any portion of an area of 524,478 acres adjoining the Colorado and Pike National Forests.

This was promptly followed by the withdrawal of these lands from all forms of private entry, through an order of the Secretary of the Interior. The lands have been since examined and classified, and the addition of this area to the adjoining National Forests now awaits the President's action.

Although on the entire area 252,840 acres are alienated lands belonging or claimed by private parties, or nearly 50 per cent of the total, yet these claims represent an almost negligible area of cultivated or cultivatable



lands. On the Colorado extension but 162 acres are listed by the assessors as agricultural, while but 6402 acres are meadow land. The remainder is assessed as pasture land and valued at \$2 to \$3.50 per acre. Roughly speaking, 25,000 acres of this is owned by the State, 50,000 acres by railroads, 125,000 acres by individuals, and the remainder represents claims pending. So thoroughly have private interests searched this area for possible values that, although a period of over eight months elapsed from the date of introduction of the bill—January 27, 1916—to the date of its passage—October 2, 1916—during which time petitions to secure the withdrawal of the lands from entry were unavailing, yet in that whole period but 14,260 acres of additional claims were filed, leaving a quarter of a million acres of Government land which no one could be tempted to claim.

The sharp contrast between the fertile plains, of which practically every acre capable of irrigation is in cultivation, and the foothills immediately adjoining, covered by this withdrawal, where the only land capable of being cultivated lies in a few narrow ribbons along portions of the larger streams, is an excellent illustration of the natural classification of land into agricultural and non-agricultural areas. Many false statements have been made in the past about the inclusion of lands valuable for agriculture within National Forests in Colorado. The history of this foothills region shows conclusively that at least in this locality the National Forests failed to include an immense area of land so poor that no one would have it after many years of opportunity.



ALONG LITTLE THOMPSON RIVER

A beautiful bit of road in the proposed addition to the Colorado National Forest.

These lands either have been or will be placed under the permanent care and management of the Forest Service following the Presidential proclamation. In spite of their poverty for agriculture, they will produce timber crops of great value, and their protection from fire and reforestation will have an immediate effect in regulating the stream flow and supplying additional water during the dry months when it is most needed.

The accompanying photographs show the character of lands to be added to the National Forests, and reveal both their possibilities for the production of timber and their absolute unfitness for agriculture.

The National Forest policy has come to stay. It has won on its own merits in Colorado, in the face of bitter and prejudiced opposition. The solid citizens of the West, whose interests lie in creating and maintaining conditions mak-

ing for stability and permanent prosperity, are behind the broad constructive policies of the Forest Service, and their influence is becoming increasingly important in overcoming the harmful activities of the elements whose principal aims are exploitation and speculation. The difference between mushroom prosperity incident to the rapid exhaustion of natural resources, and the slow but far more lasting and beneficial development resulting from the protection and renewal of the timber and forage by regulated use, is beginning to be recognized throughout the entire West, and, with this changing viewpoint, hostility to the National Forest policies has given way to a cordial and intelligent support and cooperation.

**D**URING the present summer the Extension work of the New York State College of Forestry will be developed along the line of woodlot improvement demonstrations. Calls for advice along this line have become so frequent that trips will probably be arranged in the fall to take in a number of woodlots in given localities. A trained Forester from the College will demonstrate methods of improving the stand by taking out unprofitable trees and planting rapidly growing species in large openings, and in simple methods of estimating the volume and value of woodlot stands.

**A** TREE census has recently been taken by the school children of Binghamton, New York. The work was done in cooperation with The New York State College of Forestry at Syracuse University, and the information resulting will give the number of trees by streets, the species, condition, and other points valuable in working out a definite Shade Tree Program for the City. This work is done in accordance with the agreement of The State College of Forestry to cooperate in village improvement work along Landscape Engineering lines. Professor Henry R. Francis represented the College at Binghamton.

## MIDSUMMER FLOWERS

BY DR. R. W. SHUFELDT, C.M.Z.S.

AS common a plant as the Dandelion is, with its great golden flowers (Fig. 1), how rarely do we see reproductions of artistic photographs of it, presenting it in all its splendor as we find it in nature! There is a very good reason for this. As a rule we find it growing close to the ground, and it generally requires a high order of patience to so place the camera that what we see of it is reproduced on the camera's ground-glass. Then, its brilliant yellow flowers require the use of a special plate, in that they may not photograph nearly black; and finally, if one attempts to dig up a plant in order to photograph it indoors, its big and long root

acts as a deterrent to its proper transplanting. If the root be cut in two an inch or more below the surface of the ground, the leaves and flowers wilt in a few moments, rendering them unfit subjects to pose before the camera in the botanist's studio. Neltje Blanchan refers especially to this latter character when she described that part of the Dandelion plant; she says: "Deep, very deep, the stocky, bitter root penetrates, where heat and drought affect it not, nor nibbling rabbits, moles, grubs or insects, and other burrowers break through and steal."

Where the climate is mild, or where mild winters occur from time to time, one may expect to see Dandelions from day to day throughout the entire year; this is often the case in Washington, D. C., where it is no uncommon thing to observe a flower of this species peeping above the snow in January; a layer of snow on the ground there may by no means be long lasting. Then, in this city, when spring comes around, these very Dandelions may appear in magnificent abundance. There was at least one marvelous outcropping of them on the broad

lawns of "Oak Lawn" of the Dean estate on Connecticut Avenue, in the very heart of the city. The million or more of flowers formed a close carpet of gorgeous, golden yellow that spread over several acres of ground, forming a wild-flower exhibit not easily forgotten.

There are several species of Dandelions in this country, belonging to different genera, as the Dwarf Dandelion and the Tall Dandelion, which will be figured and described later on, should good examples come to hand.

In midsummer, throughout the eastern parts of our country and elsewhere, there is such a bewildering blossoming-out of flowers, of so many descriptions and in every con-



FEW WILD FLOWERS POSSESS GREATER BEAUTY THAN THE COMMON DANDELION

FIG. 1.—One of the most abundant of all the *Compositae* is this golden beauty of the pastures, lawns, and waysides. Scientifically, it has been named *Taraxacum officinale* for the reason that its root has been employed for medicinal purposes: there are several other species of dandelions more or less nearly related to it. Originally, it was introduced from Europe; but at the present time it has spread over a large part of the world. The Dandelion has everything in its favor to spread its kind to all quarters of the globe; and it would seem that, in certain sections or even regions, it is becoming more and more abundant each year that goes by.

ceivable sort of place in nature, that it is no easy matter to make a choice at this season, in that the flora may be fully, or even fairly, represented. However, there are some flowers that must not upon any account be overlooked; and, abundant as the chosen flower may be, one can generally manage to find out something about it which is not very generally known. This holds true, for example, in the case of such a plant as the Pink Knotweed, of which a spray or two is here shown in Figure 2. Masses of its gorgeous pink flowers are to be seen along the roadsides, in the corners of pastures and fields and in many so-called waste places. Not one in a hundred who daily passes them even knows the common name of the plant, to say not a word as to its scientific name. Its rosy flowers are bundled together on erect spikes an inch or more in length, and they open in the most unmethodical manner here and there along the spike. Many insects are attracted to them, especially the smaller bees of the genus *Andrena*, fertilization taking place much as we find it in the common Buckwheat, to which group the Pink Jointweed belongs.

A little while after fertilization the seeds begin to form inside the calyx, which is likewise pink and persistent. They are almost black when ripe—flat, small, and sub-circular or cordate in outline. So deliberate is the blos-



PINK KNOTWEED IS A CONSPICUOUS JULY FLOWER

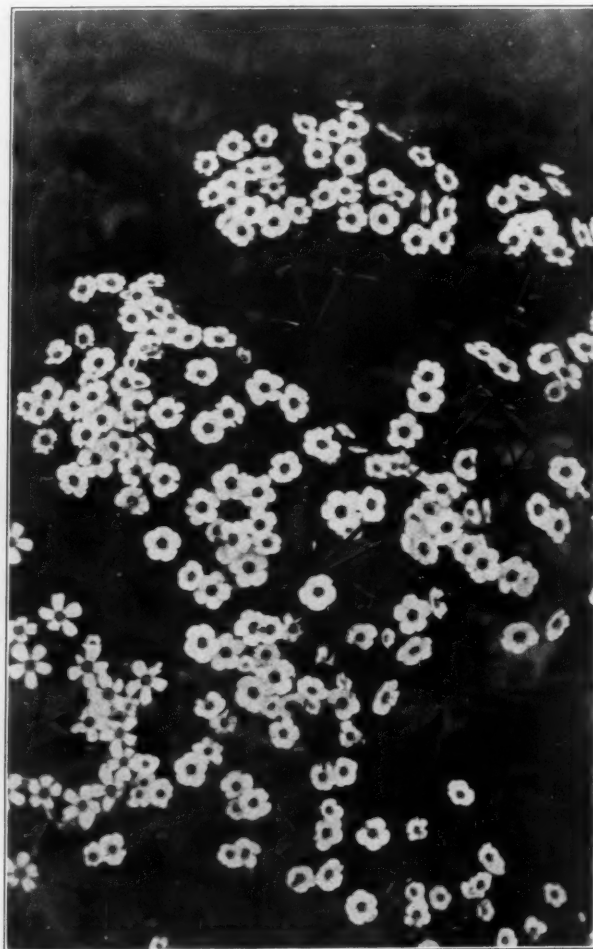
FIG. 2.—This plant has several common names besides the one given above, it being known in some sections as Common Persicaria, while to others it is familiar as Jointweed or Smartweed. Botanically, it has been relegated to the Buckwheat family (*Polygonaceae*), where, according to Gray, it belongs in the genus *Persicaria*, it being *P. pennsylvanicum*; other botanists, while giving it the same specific name, retain it in the genus *Polygonum*. Its flowers, which are of a rose-pink color, sometimes tinged with greenish, are well shown in the cut, as are also its lanceolate leaves. The plant flourishes best in moist soil, though it is abundant everywhere on its range from July until late autumn, adding masses of color along the roadsides and in waste places in the rural districts. Single plants are sometimes very extensive or spreading, and may grow to be at least a yard in height. One of its chief characters is the stipitate glands found on the upper branches and on the peduncles. Jointweed flourishes from northern Maine to the Gulf, and westward to Texas and Minnesota. The butterfly in the picture is the Black Swallow-tail (*Papilio troilus*).

soming of this Jointweed that we can always find more buds and seeds than we can find flowers on any spike. *Polygonum*, which is the generic name for this plant and its allies, is composed of two Greek words, meaning *many knees*, which refers to the numerous joints seen to compose the stems of the plant.

In our country no plant has been more generally relegated to the order of "weeds" by farmers and other tillers of the soil than has this much-despised one. As to

their seeing "beauty" in the pink flowers of a "Smartweed," it is quite safe to say that, as a rule, they most emphatically do not; should they, perchance, see it and appreciate it, it is much to be doubted that it would even be admitted by any one of them. This should not cause us any surprise, for "weeds are weeds" to all cultivators of the soil, and in thousands of cases they are the chief menace to the annual success of their labors.

These Smartweeds, Jointweeds, Pink Knotweeds, or whatever we may choose to call them, of the Buckwheat family (*Polygonaceae*) are a most puzzling group



THESE LITTLE WHITE BEAUTIES DECEIVED THE OLD BOTANISTS

FIG. 3.—Flowering Spurge (*Euphorbia corollata*); natural size. This is a specimen from southern Maryland; and, while the plant is found in rich and sandy soil from New York southward and westward, it has, of recent years only, been naturalized in New England. We generally meet with it in open fields from midsummer to October; and, when abundant, it is quite conspicuous, especially when it attains a height of thirty-six inches or more, as it often does. It can easily be seen at quite a distance. The true flowers, both staminate and pistillate, are surrounded, as we see in the picture, by a five-lobed corolla-like involucre. The early botanists mistook this latter for the petals of the true flower; but we know better now. Note that the branches are forked, and that the flowerheads are borne upon five-forked umbels. The leaves are not very large; they may be either lanceolate or ovate in outline, and always smooth. The Spurge family (*Euphorbiaceae*) contains many species, some of which are very beautiful plants.

to study; there are dry land species, climbing species, amphibious species, and so on. Several of them present varieties, and this still further complicates their study. For example, Neltje Blanchan says: "When the amphibious *Persicaria* (*P. amphibium*) lifts its short, dense,



rose-colored ovoid or oblong club of bloom above ponds and lakes, it is sufficiently protected from crawling pilferers, of course, by the water in which it grows. But suppose the pond dries up and the plant is left on dry ground, what then? Now, a remarkable thing happens; protective glandular, sticky hairs appear on the epidermis of the leaves and stems, which were perfectly smooth when the flowers grew in the water. Such small wingless insects as might pilfer nectar, without bringing to their hostess any pollen from other blossoms, are held as fast as on bird-lime. The stem, which sometimes floats, sometimes is immersed, may attain a length of twenty feet; the rounded, elliptic, petioled leaves may be four inches long or only half that size."

There appear to be several subspecies—or varieties, as the botanists designate them—of this species, as *P. a. terrestre* and *P. a. hartwrightii*.

When we come to study the Spurge family (*Euphorbiaceæ*), we run into all sorts of curious plants, with still more curious flowers. Not a few of these are represented in the flora of our Atlantic States, from Massachusetts to Florida, inclusive, while in warmer parts of the world the array of the members of this family is simply enormous. If we chance to be crossing some barren and sandy field along in July and August, anywhere throughout the middle of its range, we are very likely to run into some of the Spurges of the genus *Euphorbia*, and most likely the Flowering Spurge (*E. corollata*), of which there is a fine specimen shown in Figure 3, collected in southern Maryland. Formerly this plant was found no farther north than New York, but of recent years it has become naturalized in New England, as far north as southern Massachusetts. East of the Mississippi Valley there are



THE GREEN TREE FROG (*Hyla cinerea*)

FIG. 4.—Should one be hunting for the flowers of some of the broad-leaved aquatic plants that flourish on the margins of ponds in any one of the southern states, the searcher is more than apt to meet with a big, green tree frog, which the herpetologists will tell you is one of the most conspicuous and interesting of its genus. This is *Hyla cinerea*. It has a near relative in *Hyla exilata*, which has thus far only been found near Washington, D. C.; we have but meagre knowledge of its habits. The Green Tree Frog, as its name would suggest, is of a brilliant pea green, verging upon a bright pale yellow. Upon either side it has an elegant stripe of white or pale golden yellow, the legs being similarly striped, the former being emarginated with black. It is one of our largest tree frogs, and certainly one of the most handsome. It thrives well in captivity, living upon flies and other insects: it is a noisy but not an especially active species. The specimens shown in the cut were taken near New Orleans, and were in the possession of the writer several days for the purpose of photography.

upwards of thirty species of *Euphorbia*, as the Sea-side Spurge, Milk Purslane, Snow-on-the-mountain, Painted Leaf, Wartweed, and the rest, while in this same family with our pretty little Flowering Spurge we find the famous Castor Oil plant (*Ricinus communis*), and several species of Mercury of the genera *Mercurialis* and *Acalypha*.

The flowers of the Flowering Spurge are both staminate and pistillate kinds, and, strange to say, the plant is rather closely related to the elegant Poinsettia, with its gorgeous scarlet or vermilion flowers—a plant we not rarely have the opportunity to admire in the show windows of the establishments of first-class florists. Flies of various species are the insects most often responsible for the fertilization of the Flowering Spurge, and they carry the pollen from its staminate flowers to the pistillate ones—minute and delicate little structures situated in the centre of the showy, though small, white involucre. Some of the *Euphorbiae* are poisonous plants, and, according to Alice Lounsberry, "the medicinal properties of spurges are said to have been discovered long ago by King Juba of Mauritania, in Africa, and to be equally well known to our own Indians; they have not altogether the sanction of many for such use. It is certainly true that, aside from its powers of purging, the plant possesses little

virtue." However this may be, it is very important that we know these interesting plants in our fields when we meet with them.

In Figure 5 we have a very pretty specimen of Bouncing Bet (*Saponaria officinalis*), a flower that has been saddled with many names, most of them as inappropriate as the vernacular one just given, as Soapwort, Hedge Pink, Bruisewort, Old Maid's Pink, and Fuller's Herb.

Originally the plant came from Europe, introduced into our gardens, from whence it has escaped to establish itself along the highways in the country districts throughout a very wide range of our country. In many localities it is very abundant and flourishes luxuriantly. In old days it was supposed to possess medicinal properties, the idea having gained ground from the fact that its leaves, when bruised, will form a soap-like lather when agitated in water. Many moths and other insects help to fertilize its flowers, and the plant also propagates through its underground runners. This latter means often accounts for our finding the plant growing in colonies in some waste fence corner along the roadside. A popular writer at hand says: "It was always a mystery to Dickens that a door nail should have been considered so much more dead than any other inanimate object, and it seems also strange that this plant should have suggested the idea of bouncing more than other plants. Dear Bettie does not bounce, nor could she if she would. She sits most firmly on her stem, and her characteristics seem to be home-loving and simple. We are sure to find her peeping through the garden fences, or on the roadside, where the children nod to her as they pass by. She is one of the best loved of our waste-ground flora."

It would appear that the common double variety of this plant is the original cultivated species, and the single variety is its more simple and wild form derived from it—the plant that usually occurs along roadside, far from any country garden patch. The flowers of Bouncing Bet are sometimes of a bright pink color, and as a rule they possess a certain spicy fragrance, which some writers speak of as "an old-fashioned odor," whatever may be meant by that term. In typical flowers, the distal ends of the petals are scalloped, a fact that lends to them a still nearer resemblance to a Pink, though, as a matter of fact, this resemblance is never very close.

The leaves of Bouncing Bet are smooth and from three to five-ribbed, and have an ovate or even oval-lanceolate outline. The most interesting relatives of the *Saponaria* are the Campion or Catchflies—curious plants with very interesting histories. Their generic name is from a Greek word meaning *saliva*, which refers to the

viscid juice found in the calyx and stems of some of the species; in this small insects are frequently entangled.

Some of the wild carnations also belong to this Pink family, and some of these have been domesticated for ornamental purposes.

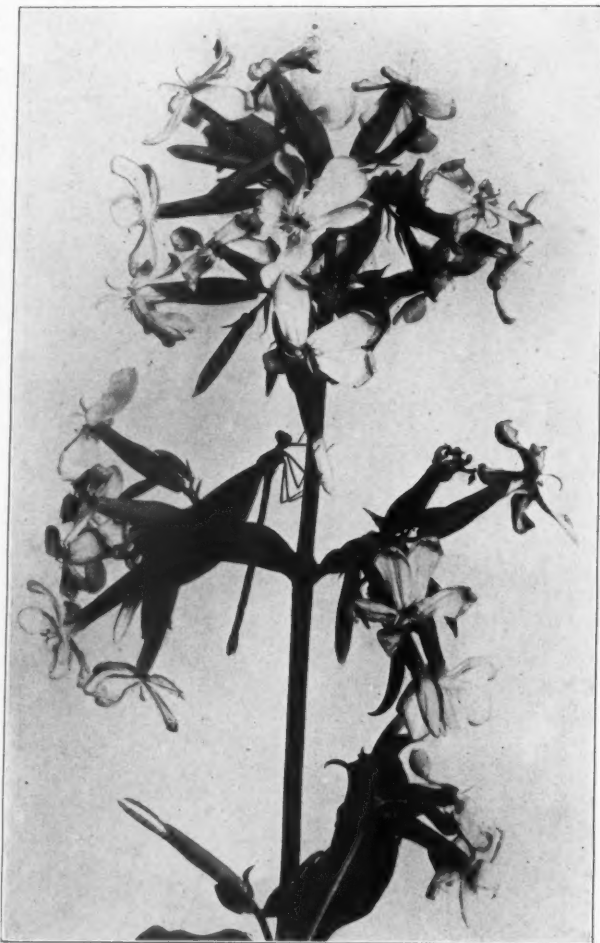
#### EASTERN FOREST RESERVES BOUGHT

THE National Forest Reservation Commission has approved the purchase of 51,916 acres of land in the White Mountains and Southern Appalachians for inclusion in the National Forests of those regions. The two largest and most important tracts whose purchase was authorized are one of 11,000 acres on the White Top National Forest in Smyth County, Va., and another of 10,000 acres on the Savannah National Forest on the Tallulah River in Rabun and Habersham Counties, Ga. The purchase of three additional tracts, with a total of 1203 acres, was authorized on the Savannah National Forest.

On the White Mountain National Forest 11,270 acres, chiefly in Carroll and Grafton Counties,

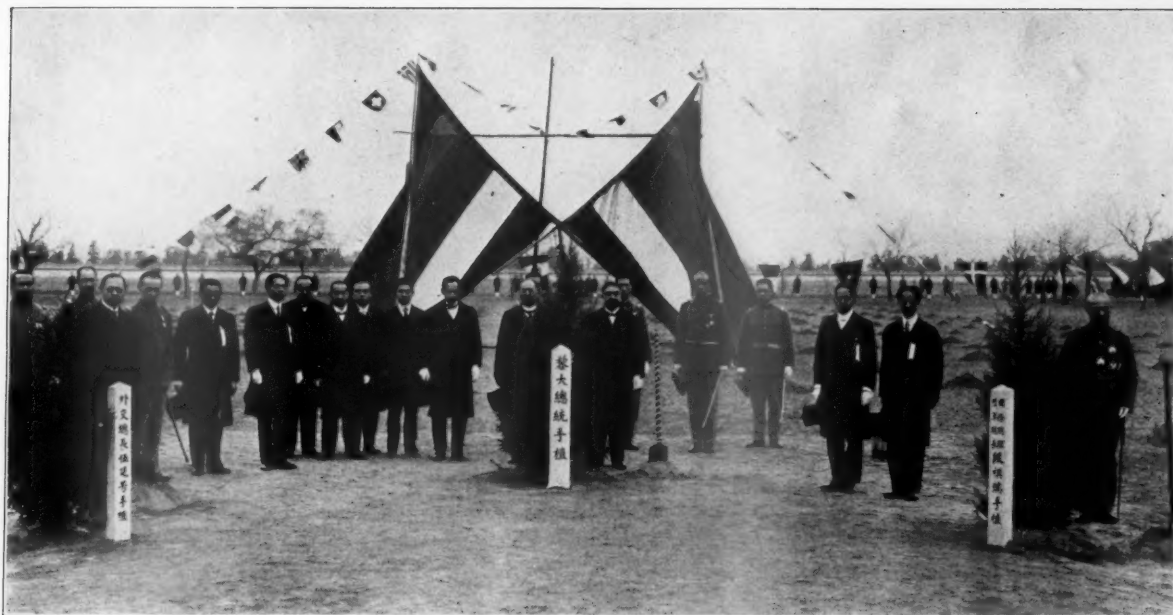
N. H., were approved for purchase. By the acquisition of this land the purchases which have heretofore been made in the White Mountains are connected and rounded out.

The purchase of 40 different tracts comprising approximately 7750 acres on the Alabama National Forest in Lawrence County, Ala., was ordered. This will raise the total Government holdings on this forest to about 30,000 acres. In Rockbridge, Amherst, and Botetourt Counties, Va., 7454 acres were approved for purchase.



BOUNCING BET, THE FLOWER OF THE DUSTY ROADSIDES

FIG. 5.—This well-known flower is also called "Soapwort," hence its scientific name *Saponaria* (*sapo*, soap), it being *Saponaria officinalis* of the pink family (*Caryophyllaceae*); the "Cowherb" is the only other representative of the same genus (*S. roceria*). Both plants came originally from Europe, and, as Gray remarks, they are "coarse annuals or perennials, with large flowers," having in their stems a "mucilaginous juice forming a lather with water." In the Pink family, in this country, also occur several species of Carnation plants (*Dianthus*); the Campions and Chickweeds, of which there are many kinds; the Scurrey, Pearlworts, and a number of species of Sandworts; finally the Corn Cockle, which has already been described and figured in AMERICAN FORESTRY (May, 1917). The insect shown on the flower below the crowning bunch is one of the Damsel-flies of the Dragon-fly group (genus *Calopteryx*); it is the black species of feeble flight, so frequently seen about the small streams that find their way through the shady forests of Eastern United States. Dr. L. O. Howard says that their "large pop-eyes which seem almost stalked like those of a crab" are distinctive of them.



TREE PLANTED BY PRESIDENT LI YUAN-HUNG OF CHINA

A group of high Chinese officials taken just after the ceremonial observance of Arbor Day at Peking, China, on April 5th. President Li Yuan-hung is seen in the centre of the picture, behind and slightly to the right of the tree he has just planted. The stone tablet bears the inscription in Chinese "Planted by the hands of President Li." The Premier, General Juan Chi-rui, is seen in uniform at the extreme right. Between him and the President are Mr. Jao Chang-shang, Chief of the Department of Agriculture and Forestry (on the left), and Mr. Ngan Han, well-known to American foresters and to whose influence the adoption of a national Arbor Day in China was largely due. Behind the tree at the left is Dr. Chen Chin-tao, Minister of Finance.

## FORESTRY PROGRESSING IN CHINA

**F**ORESTRY propaganda in China is making steady progress and producing results increasingly important. Indications of the growth of interest in reforestation are manifested throughout the nation and from various sources AMERICAN FORESTRY is in receipt of information, proving that this long neglected subject is now receiving the attention it deserves. In official circles and elsewhere the republic is awakening to the necessity of making up for the laxity that has caused China to be looked upon as the horrible example of indifference to the importance of forest development and conservation.

Not the least significant incident along this line was the personal participation of President Li Yuan-hung in the Arbor Day exercises in the Temple of Heaven at Peking, April 5. Information concerning this celebration comes in a letter from Mr. W. F. Sherfese, an American, who is now Adviser in Forestry to the Chinese Government. Mr. Sherfese writes that this was the first time a ruler of China had taken part in exercises of this nature and adds that it was unquestionably the President's intention thus to invite national attention to the importance of forestry in the republic. The day was observed as a national holiday, and similar exercises took place in all of the provincial capitals and in most of the cities of lesser importance.

"President Li is an ardent friend of forestry," adds Mr. Sherfese, "as indeed he is of whatever promises to promote the economic and social welfare of the people, and never misses an opportunity to express his interest

in, and to exert his influence in favor of, the work. Especially at this time of crisis in international affairs, when the president is overwhelmed with pressing important matters of all kinds, it was no slight sacrifice on his part to devote the time and effort to making the occasion one of national prominence; and to him is due the gratitude of all friends of Chinese forest conservation."

Clippings from Chinese papers, enclosed with Mr. Sherfese's letter, describe the Arbor Day ceremonies in detail and make it clear that the event was regarded as of great national importance. The *Peking Gazette* speaks of the celebration as one that should go down in history as marking another milestone in the progress of the first republic in the Far East. "Until yesterday," says this paper, "the prayers offered by the rulers of China, imperial and republican, had been in the form of words and burnt offerings. Yesterday it took the form of a practical demonstration. The occasion records in actual deed the fact that China no longer dreams of prosperity pouring down from heaven without the people lifting a finger, but believes that prosperity must come with work—actual work of the hand. The most remarkable fact is that it was the President, the chief executive and representative of the country, who made this demonstration. Nor was it a perfunctory act that was gone through to show the people that their ruler was not idle. The example set by the president was immediately followed, eagerly and sincerely followed, by hundreds of others who were privileged to take part in the ceremony. The rush for





THE CENTRE OF LAI-AN

The Kuli hsing ting gate marks the centre of the town where Dr. Bailie's colony is established.



NORTH GATE OF LAI-AN

Showing character of the houses and the streets in the village whose people have started a forest nursery.



LU TI MIAO SHRINE

An old shrine near the village which is but little shaded by a feeble tree which cannot live much longer.



FAMINE REFUGEES

These people are entering the village from the famine stricken country. The family property is all on the wheelbarrow.



PU SHU SHRINE

A small shrine along the roadside a short distance outside the gates of the village of Lai-an.



SOUTH GATE OF LAI-AN

Showing the old town walls and the moat which constitute the town's chief defences against an enemy.



MAIN STREET OF LAI-AN

Dr. Bailie speaks feelingly of the filth and destitution of this walled village which is called a city.

**VIEWS OF LAI-AN COLONY, CHINA, WHERE A FOREST NURSERY HAS BEEN ESTABLISHED**



STOCK FOR THE LAI-AN NURSERY

This stock sent from the University of Nanking, the magistrate paying half and the colony half the cost.



THE LAI-AN FOREST NURSERY

Magistrate Wan, in black and white, directing the work of establishing the nursery near the village.



REFUGEES IN A HUT

These people fleeing from the country took refuge in a hut under a ginkgo tree on the nursery plantation near Lai-an.



THE MEN RESPONSIBLE

Magistrate Wan of Lai-an, Dr. Bailie and Mr. Best, the men whose efforts resulted in the forest nursery being established.



CHURCH AND PAGODA

These places are some fifteen miles from Lai-an, but on the road to it, and are very well attended by the villagers and others.



THE NURSERY GROUND

After a conference the plot of ground here shown was selected for the location of the forest nursery.



A LAI-AN BACK YARD

The donkeys so much used in China are kept so close to the kitchen door that they are the chief back yard ornaments.

seedling plants was so great that many went away disappointed because they were unable to plant trees with their own hands."

Small cypresses were planted by the President and by all the members of his cabinet with the exception of Minister Wu Ting-fang. Other high officials of the government followed his example. After the ceremonies citizens and school children planted all the trees that had been provided for the occasion.

Since Mr. Sherfese's letter was written internal troubles have arisen in China. Imperialists have overthrown the government and have been in turn assailed by the Republicans.

One of the most important examples of the Chinese interest in forestry matters is afforded by the success of the Colonization Association in its work on Purple Mountain. This association was the outgrowth of relief work undertaken in 1911 by Dr. Joseph Bailie, Instructor in Forestry at the University of Nanking. The organization owns 1000 acres of land on the north-west slope of the mountain, and this property enables it to carry out its plan of providing work for the poor and at the same time give the workers the benefit of the fruits of their industry. The men have been employed in digging canals, removing stones, making roads, levelling uneven places and converting a waste area into an orchard and plantation of mulberries. Much opposition was experienced during the early stages of the work, but this has been replaced by complete confidence and coöperation. Undertaken as a means of giving succor to sufferers from famine, the association has proved the soundness of its plans and has put to profitable use large areas hitherto idle. It has given temporary employment to thousands, and many families now gain a permanent and comfortable livelihood on land which otherwise would have remained indefinitely unproductive. It has resulted in the establishment of a comprehensive course in forestry at the University of Nanking and has served to arouse interest in other and possibly larger projects of reforestation throughout the republic. Under date of May 20, Dr. Bailie writes from the University:

"I made a trip to Lai-an Colony, where we have over 80 families, numbering over 400 people, now independent. The object of my visit was to establish a nursery for our

Colony to enable the colonists to plant trees on those lands that are too steep or too stony for cultivation. I had also hopes to be able to extend the Colony. In this latter object I was foiled. When we took the 80 families—refugees—from the farmers for whom they were working in 1914 and put them on the mountain, wages for the next harvest doubled, and have never gone down below a living wage. The farmers contended that if we open another mountain wages will go up again. We have proved that if the lands are thrown open the poor can maintain themselves even if the lands are second or third rate.

"We were successful in opening our nursery. The official had heard that I was going up to start it, and he requested me to bring some trees and seeds along for him as he also wanted to open a nursery. In two of the pictures which I send along the bundles of nursery stock are seen outside of Mr. Best's gate. We sent up from our University nursery robinias, melia azederach, maple, pines, thunbergii, sophora japonica, pistachio chinensis, gleditsia and ginkgo biloba, besides a few of the other species.

"The official after some conferences arranged to have a meeting at Lo-an temple, which is the administrative centre for our Colony and is distant from Lai-an about eight miles. Though the temple belongs to the association, he invited us all as his guests, and provided a horse for Mr. Best and a chair for me. He himself went ahead in a chair. After some deliberation on the spot it was decided that the official coöperate with our association and that he give half of the expense and the association give half. Mr. Yu, who is the caretaker at Lo-an temple, and the manager among the colonists under Mr. Best, has done such good work that he is made the head of the nursery, and the official has been much pleased by his management for over two years.

"A photographer took a number of pictures on this trip and I send you several of them. You will see how squalid a place Lai-an is and the self-denial involved for Mr. and Mrs. Best in making it their home instead of remaining in civilization. It is simply like going into heaven to get into Mr. Best's mission compound after being out in the filth and destitution of this walled village called a city."

Acknowledging a copy of the constitution and by-laws



ARBOR DAY IN CHINA

President Li Yuan-hung (indicated by a cross at the foot of the steps towards the right) and his party leaving the Chai Kung on his way to perform the tree-planting ceremony on Arbor Day in China. This temple is situated within the enclosure of the Temple of Heaven, Peking, and it was here that the Chinese Emperors used to fast before proceeding to the Altar of Heaven to offer sacrifice.





TEMPLE GIVEN TO LAI-AN COLONY

If the presentation had been delayed a few days all the trees surrounding this Ta an Temple would have been cut down.



SHRINE OF THE GOD OF FARMING

Note how religiously the trees surrounding this temple have been preserved despite great need of firewood.



INTERIOR OF TA AN TEMPLE

The tree banked up with stones is a knei hua and over 500 years old. When in bloom its fragrance is perceived three miles away.



BRIDGE NEAR CHU CHI

Owing to deforestation the floods in this region are so great that in flood times this bridge is impassable.



EN ROUTE TO TA AN TEMPLE

Dr. Bailie in a chair and Mr. Best on horseback on the way to the Temple presented to the Lai-an Colony.

SCENES IN THE COUNTRY NEAR LAI-AN, CHINA, WHERE A FOREST NURSERY HAS BEEN STARTED

of the American Forestry Association, Mr. D. Y. Lin, Executive Secretary of the Conservation Division of the Young Men's Christian Association of China, writes from Shanghai:

"I am sure this booklet will be of great help to me in my attempt to get a Chinese forestry association firmly established. I shall be very glad to tell you later, in detail, how I have been working to interest prominent men in this country in such a movement.

"After my lecture campaign in Nanchang, I went to Wuchang, where altogether nine lectures were given. The total attendance was 3580. Military Governor Wang Jen-Yoen, who is also civil governor for Hupeh, presided at the first meeting, and his interest certainly gave a good start to the campaign in Wuchang. Results of the Wuchang campaign may be briefly stated as follows:

"1. The governor issued circulars to different districts urging local magistrates to do a certain amount of planting every year and asking the different taoyin to supervise the work.

"2. An appropriation for extension work to be done by some government agricultural students during the summer time has been granted.

"3. A bureau for the promotion of forestry in Hupeh will be inaugurated in the Agricultural Society.

"Leaving Wuchang I went direct to Changsha, Hunan. It was in this province that preparations for a forestry lecture campaign were most complete. The governor gave \$150 to defray expenses for running a local campaign in Changsha. The Hsien officials were notified. Arrangements for a trip through the province were made. Altogether 15 lectures were given in Changsha and as many as 5912 people attended these lectures. The gover-

nor was so pleased with the results in Changsha that he appointed one of his secretaries to escort me through the province and urged me to lecture in as many of the interior cities as possible. Four cities were visited and I lectured in three of them. Coming back to Changsha I was asked to inspect Yaloshan, where the famous generals, Huang Hsing and Tsia Oa, are buried, to see what could be done to reforest, or, rather to beautify, the mountain.

"Perhaps the most important lecture in Changsha was the one before the provincial assembly. The lecture was arranged by the governor and the Commissioner of Industries, who wished to see that the assemblymen would take a greater interest in agriculture and forestry and would appropriate more money for the work for the entire province. The lecture was a success and it was followed by some most interesting discussions as to what ought to be done at once on Yaloshan and throughout the Hsien cities. There is every reason to believe that forestry work in Hunan will have a good start this year. The results of the Hunan forestry campaign may be summarized as follows:

"1. Five cities were visited, 19 lectures given, and 7912 people reached.

"2. A forestry association for Hunan was started.

"3. A forestry essay contest will be conducted to encourage the study of forestry among Hunan students.

"4. Two men have volunteered to carry on lecture work in the country towns, and three sets of my lecture outfit have been ordered.

"The results of such forestry lecture campaigns in Kiangsi, Hupeh and Hunan during the last two months are indeed encouraging."

## FORMS OF LEAVES

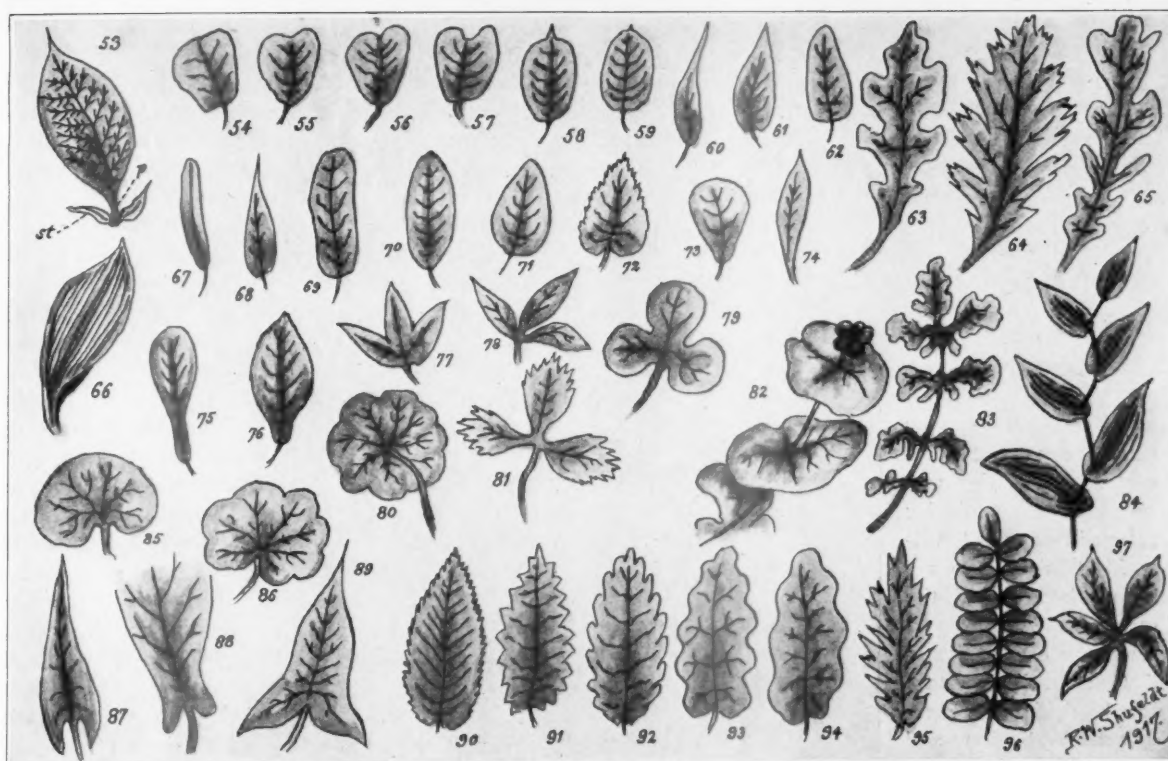
A PERFECT and typical leaf (Figure 53) consists of its expanded part called the *blade*, which frequently has a foot or leaf-stalk termed the *petiole* (*p*), and a pair of *stipules* (*st*); sometimes the blade is called the *lamina*. In Figure 53 the midrib, veins, and veinlets are well shown. There are two principal types of this veining: the netted-veined and the parallel-veined (Figure 66). The significance of this is extremely important; moreover, it has much to do with the form assumed by leaves in general.

Leaf-forms are well-nigh infinite; but they may be so classified as to be referred to specific kinds, for which a terminology is highly necessary. This terminology is also applied to other parts, as the petals of flowers; and so on. Most all leaves have a base and an apex with respect to the stem, and these vary in general contour as well as in their margins. As to the apex, it may be *truncate* or square across (Figure 54), *retuse* or indented (Figure 55), *notched* or *emarginate* (Figure 56), *obcordate* or deeply notched at the apex, causing it to be inversely heart-shaped (Figure 57). Then they may be *cuspidate*, where the apex is rigidly

spined (Figure 58), or *macronate*, where this spine is small, perhaps a mere extension of the midrib (Figure 59).

As to the general form of the leaf, it may be *linear*, that is long and narrow (Figure 67), *lanceolate* or lance-shaped (Figure 68), *oblong* (Figure 69) and *elliptical* (Figure 70), as well as *ovate* or egg-shaped (Figure 71), and *cordate* or heart-shaped (Figure 72). When the leaf tapers to an acute angle at the base, being broad above (Figure 73), it is said to be *cuneate* or *cuneiform*, and when it is inversely ovate, it is said to be *obovate*, as in Figure 76. Then the outline may be *spatulate* (Figure 75), also *oblanceolate* (Figure 74), which is lance-shaped, with the small end at the base—the reverse of Figure 60.

Passing to the form of the base, it may be *reniform* or kidney-shaped (Figure 85), or *peltate*, shield-shaped (Figure 86), as in the white Water Lily. If the margins at the base of this leaf are brought together, we have another shield-form (Figure 80), which is the Marsh Pennywort. A leaf may be arrow-shaped or *sagittate* (Figure 87), *auriculate* or eared (Figure 88), as well as *hastate* or halberd-shaped (Figure 89).



Then we may have simple or compound leaves, all in one piece in the first instance, or divided up into two or more pieces springing from a single stalk, when they are termed *compound* leaves; an enormous number of patterns represent these two divisions. With respect to other outlines, the leaf may be *entire*, that is with unbroken margin; but when this margin is saw-toothed, it is said to be *serrate* (Figure 90). When the teeth point outwards, it is *dentate* (Figure 91); if the margin be scalloped it is said to be *crenate* (Figure 92), and if wavy it is *undulate* (Figure 93). If markedly wavy it is *sinate* (Figure 94). Finally, the margin may be *incised* or jagged (Figure 95).

Sometimes leaves are more deeply cut than this, when they are said to be *lobed*—the projections being called lobes—and they may thus be 2-lobed, 3-lobed, many-lobed, etc. Simple lobed leaves are shown in Figures 63 and 79; when sharply lobed it is *cleft* (Figures 64 and 77), and such leaves may be *bifid*, *trifid*, *quadrifid*, etc., even *multifid*, giving rise to segments to correspond. If not cleft, the leaf may be parted by deeper incisions extending almost to the midrib (Figures 65 and 78); so we have them 2-parted, 3-parted, multiparted, etc. Should the incisions reach the midrib, the leaf is said to be divided, that is *bisected*, *trisected*, and so on (Figures 81 and 83). Figure 97 shows a *palmate* leaf, or five leaflets (Sweet Buckeye).

To describe the degree as well as the mode of division, other terms are employed, as feather-veined, that is *pinnately-veined* and *radiate-veined* or *palmately-veined* leaves. Figures 63, 64, 65 and 83 are examples of the first, and 77, 78, 79 and 81 examples of the second. Such terms as *palmately lobed* (Figure 79), *palmately cleft* (Figure 77),

*palmately parted* (Figure 78), and *palmately divided* (Figure 81) are self-evident.

Compound leaves exhibit leaflets as in Figure 96 which are said to be *pinnate*; there are also palmate compound leaves, sometimes called *digitate* (Figure 97). Compound leaves like in Figure 96 may have one or two leaves at the distal end of the stem, or terminate in a tendril as in the common garden pea. A variety of other terms are employed to describe the compounding of leaves; for example, the foliage of the Meadow Rue is said to be *ternately-decompounded*. But space will not admit of giving more of them here.

*Perfoliate* leaves is where the stem seems to run through or perforate the leaf near its base (Fig. 84, Bellwort); this is definitely so in the lower leaves, and less so as we ascend toward the end of the stem, where the last leaf is *sessile*. Sometimes the perfoliation is due to two leaves amalgamating (*connate-perfoliate*), as in true honeysuckle vines (Figure 82), and here the perforations disappear as the main stem is approached.

**A** SIGNIFICANT indication of the interest taken in forestry in California is the popularity of a course in Elementary Forestry at the University of California. This course is designed, not for the professional forestry student, but to supply information on forestry matters and methods for its general educational value. Seven colleges of the University are represented in the enrolment—Letters and Science, Agriculture, Commerce, Chemistry, Civil Engineering, Mechanical Engineering, Mining. Statistics recently compiled show that during the past year 382 different students have been under instruction by the Forestry Division, including both those in professional and in non-professional courses.



# ORNAMENTAL SHADE TREES AND THEIR CARE

BY HOMER D. HOUSE

STATE BOTANIST, NEW YORK

**I**T cannot be said with any degree of propriety that trees are really at home along city streets. They belong in the forest, and when planted for shade or ornamental purposes are confronted with a new set of conditions, which make life anything but a simple proposition for them. It is not unlike the problems which confront the citizen of a forested, rural community who for the first time finds himself obliged to cope with the confused life of a big city.

In this brief discussion of trees I must confine myself largely to the subject of the proper selection and care of trees best fitted for shade and ornament along the streets of cities and towns. The particular species of trees most suitable for this purpose varies considerably with the climate of the various portions of the United States and Canada, but certain general principles regarding their selection and care apply everywhere. In the use of trees for street shade there are certain requirements and conditions which do not permit of very great diversity of kinds, as compared with the number of trees which can be used for shade and ornament in parks and private estates. Allowing for certain minor differences in soil, exposure, and drainage, conditions to which trees along streets are subjected are apt to be generally uniform in any one section of the country, and experience has demonstrated the supreme fitness of certain trees and undesirability of others.

The proper use of a few hardy and desirable shade trees is preferable from every point of view to the indiscriminate and improper use of a great variety of trees, some or many of which are entirely out of place as street trees. So much has been written about the good points of our native and introduced trees that it seems like needless repetition to point out the characters which make them most desirable for street trees.

It is useless to plant trees which are not hardy or not adapted to the soil or able to withstand wind, snow, and ice, and these latter conditions may vary consider-

ably in different portions of the East and North. The most desirable are those trees which suffer least under city conditions from insect and fungous attacks. Some trees, like the basswood and maple, suffer from leaf-burn when over a light-colored pavement. Some trees do better in clay than in sandy soil. These factors must be taken into careful consideration in the selection of trees for any particular street.

Trees which do not harmonize with the width of the street and the character of the buildings do not accomplish

the purpose of beautifying the street, which is about as important as the shade which they may give. Tall, overtopping elms are not beautiful on a narrow street where houses are close to the street. For such situations trees of moderate height, growth and with slender crowns are appropriate and beautifying to an otherwise unsightly street.

Our city streets are often too full of trees like the Carolina Poplar, Box Elder, Silver Maple, and Aspens, planted by well-meaning but thoughtless people to secure quick shade in places where with a little care a Norway Maple, Sycamore, Red Oak, or Elm would have attained almost as quickly a shade-giving size and a permanency of many years. The fast-growing trees are apt to be short-lived. They are also usually the cheapest, and many people plant them for that reason. This emphasizes the importance of having all street



THE BEAUTY OF THE MAGNOLIA

This tree, most artistically placed near one of the entrances to Franklin Park, Washington, D. C., illustrates the perfect adaptability of the magnolia for such use.

tree planting under the charge of a city forester, who will set out the proper kinds of trees as soon as the street is laid out and paved.

If the houses are close to the street and close together, dense shade is not desirable. Lawns, walks, and buildings need sunshine. Under such conditions, trees like the Norway Maple if planted close together give too much shade and prevents grass from growing. A tree with thin foliage, like the Ash, White Birch, or Locust, is most desirable for such streets, although local conditions may permit Norway Maple planted at greater

distances and occasionally pruned, or the use of Sycamore, which will stand a lot of pruning.

Several trees, otherwise very attractive, are often a nuisance along streets because they litter the walks and pavements with bloom or fruit, send up suckers, or attract insects. The Silver Maple has a bad and well-deserved reputation for breaking up pavements and walks. The Honey Locust litters the pavement with slippery pods, and the fruit of the Mulberry and Shadtree are objectionable for the same reason. The fruit and foliage of the Horsechestnut cause quite a litter, and often the foliage is diseased in summer, causing it to turn brown and fall prematurely. With proper care, such a condition may be obviated and the litter of the fruit tolerated for the sake of the beauty of the flowers, foliage, and shape of the crown, since few trees surpass the Horsechestnut in these respects.

To obtain beauty in street planting there must be harmony between the trees and their surroundings. This is best obtained by using, as far as possible, trees of one kind upon a single street or block, and trees of a character that are best adapted to the width of the street and other conditions. Since the city street is not the native home of the trees, we cannot expect absolute perfection, but, excluding evergreens, it is possible to select and plant those trees most suitable for the conditions presented.

For wide avenues or boulevards, there is probably no one tree that is so satisfactory both as to size and beauty as the American Elm. On wide avenues or boulevards with a central parkway, two rows of elms may often be used, and flanking them on either side and planted on the curbing a very good effect can be obtained by rows of Sycamore, Norway Maple, Pin Oak, Green Ash, or Basswood, if the houses are comparatively close to the street. If the houses are well back from the street,

larger growing trees may be used, such as Red Oak, Scarlet Oak, Sugar Maple, Tulip Poplar, in addition to the row or rows of elms in the central parkway.

For avenues without parkways, but with broad curbing and at least 100 feet between the building lines, there is a wide range of appropriate trees, leading off, of course, with the Elm, Sugar Maple, White Oak, Red Oak, Tulip Poplar, Scarlet Oak, Red Gum, American Basswood, Cucumber-tree, and others.



Courtesy of N. Y. State Conservation Commission.

LOMBARDY POPLAR, ROCHESTER, N. Y.

Entirely too stiff and formal, and not at all suitable for street tree planting, save perhaps under most unusual conditions.

For the ordinary street, which is 70 to 90 feet wide between the building lines, trees which do not attain the largest and most majestic growth of crown are most beautiful. For such streets there is no more appropriate tree than the Norway Maple, although circumstances and taste may with equal propriety dictate one of the following: Sycamore, Sycamore Maple, Basswood, White Ash, Ginkgo, Horsechestnut, Red Gum, Pin Oak, Red Maple, Honey Locust, or Hackberry.

For narrow streets, 70 feet or less between the building lines, the number of suitable trees is very limited, and even some of them will require skilful pruning as they attain their growth to keep them in harmony with their surroundings. The best trees for this class of street are the European Linden, Red Maple, Green

Ash, Hackberry, Japanese Maple, Ginkgo, Red Bud, and Shadtree. The use of Norway Maple and Sycamore on narrow streets is very often productive of good results where they are kept trimmed.

The above paragraphs contain scarcely any mention of several trees common on city streets. For one reason or another they should not be used where it is possible to use one of the trees which experience has shown to be the best. Beech is not desirable because of its dense shade and slow growth. The Chestnut is susceptible to the chestnut blight disease, for which no control has

been found, and along with all large nut-bearing trees, like the Walnut, Butternut and Hickory, are not desirable along streets. The Black Locust (*Robinia pseudo-acacia*) suffers so severely from the attacks of the Locust borer and consequent decay that it is poor policy to make any but a very limited use of it. The Willow is not adapted either by its form or durability as a street tree.

I can well imagine that there are conditions which demand the use of trees of rapid growth, trees which ordinarily should not be used along streets. I have seen many factory streets, railroad grades through cities, and other con-

ditions where I would not hesitate to use the most rapid-growing tree available, to act both as a screen and to give shade. There are conditions where the necessity for a screen of foliage and for shade takes



Courtesy of the N. Y. Conservation Commission.

#### A TREELESS STREET

This is difficult to treat, but sycamore or Norway maple, if planted and kept carefully trimmed, would do much to destroy the ugly vista.



Courtesy of the N. Y. Conservation Commission.

#### A STREET PLANTED WITH WHITE BIRCH

Could anything be more inviting, restful, or pleasing to the artistic sense than this tree planting? Contrast this cut with the one above.

precedence over beauty and length of life. The Ailanthus, Carolina Poplar, Black Poplar, Lombardy Poplar, Horsechestnut, Box Elder, and several other rapidly growing but comparatively short-lived species are eminently fitted for such purposes. Sometimes it is possible to alternate these trees with slower-growing but longer-lived trees which when they attain sufficient size may be left,



complications which frequently make them very easy victims to a wide range of injuries. Many, if not most, of the injuries which lead to the death of street trees can be prevented. They can only be prevented, however, by proper municipal control of the causes or agencies which produce the injury and a more extensive public-spirited effort to aid such protection.

It would be almost impossible in a short space to enumerate the kinds of mechanical injuries to which street trees are subjected. Trees close to the curbing are subject to abrasion by passing vehicles, or abrasion may be caused by the piling of flagstones or paving blocks against the trees. I have seen this sort of injury in cities with most efficient city foresters and park superintendents. If they are powerless to prevent such injury, or overlook the matter, such cities still have some progress to make in the care of their trees. Horses when hitched to a tree close to the curbing will almost invariably gnaw the bark. All of these injuries, while more or less preventable, indicate that absolute prevention may only be secured perhaps by the use of iron palings around all trees upon the curbing.

Careless telephone men, in spite of the definite orders



*Courtesy of N. Y. State Conservation Commission.*

AN ATTRACTIVE ROW OF NORWAY MAPLES

This exemplifies the practical value of the Norway Maple, than which it would be hard to find a better tree for roadway or street planting.

of all telephone companies to the contrary, frequently use their climbing spurs in ascending trees. Important roots are often cut off and destroyed by the laying of curbs, gas and water pipes.

All injuries of these kinds, as well as a wide variety of other mechanical injuries to either trunks or roots, result in the formation of decayed spots, which if neglected will sooner or later shorten the life of the tree.

Escaping gas causes the death of many city trees, especially where the gas mains are laid under or close to the sidewalks as they are in some cities. Even when the main is under the pavement, the connecting extensions to the dwellings on either side often become defective and the gas escaping into the soil frequently causes the death of surrounding trees before the leak is discovered and repaired. Greater care in the use of better pipes and better joints seems to be the only solution of this sort of damage, which probably kills more city trees than any other one agency.

In wet weather or during storms, lighting wires, carrying an alternating current, will cause serious damage to trees, when the loss or abrasion of insulation makes direct contact possible. This trouble is easily detected and easily remedied, and in cities where any degree of care is taken of the lighting installation serious injury to trees from this cause is rare. High-tension, direct-current-bearing wires, if brought into contact with trees, will kill them the same as by a lightning bolt striking the tree. Hence such wires should be most carefully insulated when near trees, and, what is safer for both trees and human beings, placed under ground.

It seems absurd to class pruning among the injurious agencies of trees, but a casual inspection of the trees in almost any city appears to indicate that careless and improper pruning has accomplished great damage. There is a right and a wrong way to prune trees, and a saw, an ax and a little muscle are not all the requirements for correct pruning of trees. When cut-



*Courtesy of N. Y. State Conservation Commission.*

A MAGNIFICENT SPECIMEN OF THE AMERICAN ELM  
Most beautiful of all shade trees, in the opinion of many, and undoubtedly ideal for planting of broad streets and avenues.

close to the trunk and not supported, a heavy limb will split down the side of the trunk before it is completely severed from the tree. This split of exposed wood is difficult to prevent from starting to decay. If the branch is cut too far out, a stub is left which will decay and extend its decay into the heart of the tree. Proper pruning demands that the limb be supported by ropes until severed from the trunk by a cut made some distance out from the base of the limb, and that the stub thus left be cut off close to the trunk and painted or treated with some preparation which will prevent the start of decay before it heals over.

The use of cement fillings for decayed spots in street trees is doubtless too expensive, if well done, to be practicable on a large scale, however desirable it may be as a treatment for privately owned trees. For certain city-owned trees of exceptional size and beauty, it is worth all that it costs. For the ordinary street tree, it is probably best, in the long run, to merely remove the decay, giving the interior sufficient ventilation to check to some degree the progress of decay. In many cases, where the tree is badly decayed, it is best to remove the tree and plant a good-sized healthy young tree to take its place. That such trees need care is obvious. What care they will receive depends much upon the funds available and the tastes and desires of those in charge.

Space need not be taken here to diagnose the numerous insect and fungous attacks upon trees. The more serious of them have received careful study in many quarters. The fact that with all of our knowledge of shade-tree insects and fungi, the trees continue to languish and die in many towns and cities, points to a more important



THE CATALPA IN BLOOM

Largely used for ornamental purposes on lawns and in parks because of its fragrance, showy flowers and heavy foliage.

phase of tree protection. I refer to the frequent lack of municipal regulation in the planting and care of street trees, the careless attitude of the public, which is really most directly concerned, and the insufficient authority and working funds delegated to city foresters.

It would be a great injustice to say that all cities are negligent in their care and appreciation of shade trees, because many cities are keenly alive to the importance of the subject. A large number of cities now have trained men to look after the planting and care of their trees. Too often these men are underpaid and as a result poorly trained for the work and not active personally in local affairs pertaining to civic improvements. Too often they are limited in funds to such an extent that important work cannot be done at the right time. Civic organizations

of every city should interest themselves more in the matter of shade tree improvements to be obtained by trained and well-paid men. It is an investment for the future which no city will ever regret, and its results are almost immediately evident in the improved appearance of the trees and the systematic planting of the right kinds of trees along new streets.

I believe that we should be optimistic enough to expect that results will speak for themselves, and that every city will rapidly come to realize the importance of placing its planting plans and care of trees in the hands of a competent and well-trained forester, giving him funds and authority, not merely to give advice, but to accomplish results, which, measured by beauty, will have a value in the future unrivalled by any other form of civic improvement.

**T**HE California lumber manufacturers have taken up the campaign for food production on their available land and Secretary E. A. Blocklinger, of the White and Sugar Pine Manufacturers, has sent out a detailed letter urging the production of food as a patriotic duty and opportunity.

**A** TREE forester and landscape engineer are desired by the city of Trenton, N. J., and applications blank for the places should be in not later than August 3. All information regarding the requirements may be had from the Civil Service Commission, Trenton, N. J.

## THE WRENS

(Family Troglodytidae)

BY A. A. ALLEN, PH. D.

ASSISTANT PROFESSOR OF ORNITHOLOGY, CORNELL UNIVERSITY

**A**GES ago there dwelt in northern Africa and along the Red Sea certain tribes of men known as the Troglodytes. They were herdsmen, living entirely upon flesh, and they made their homes in caverns which the ancient sea had gnawed into the rocks. They were hole-dwellers. This alone could have prompted the name of *Troglodytidae* for the great family of wrens, for surely there is no other comparison between these prehistoric, carnivorous shepherds and the little energetic brown birds which compose the wren family. But *Troglodytidae* they were christened, because of their hole-nesting habits, and by that name shall they always be known.

There are about 260 different kinds of wrens, the majority being found in the tropics of South and Central America. Between thirty and forty are found in the Old World and only fourteen in the United States and Canada.



PETULANT, INQUISITIVE, MISCHIEVOUS—BUT A GOOD FRIEND  
JUST THE SAME

The house wren—the commonest and most widespread of all the wrens—is fond of human habitations and quick to avail himself of nesting boxes or crannies about the porch.

In spite of their numbers, they are remarkably uniform in plumage, wearing browns and grays in very inconspicuous patterns. They are, with few exceptions, very small birds, seldom exceeding five or six inches in length, with rounded wings and short tails, which they characteristically hold erect or even tilt forward over the back. Their small, plump, brown bodies and their habit of haunting brush piles or sneaking along the ground

give them an exceedingly mouse-like appearance. In fact, were it not for their inquisitive ways and their petulant voices, wrens would seldom be seen; but as it is, one cannot pass their retreats without being surveyed



GUARDING THE MARSHES

Short-billed marsh wrens would seldom be seen if they were content to creep around the tangled sedges, as is their usual habit—but at anyone's approach they climb the tallest reed in the vicinity and rebuke him for venturing into the marsh.

from every side and without being the target for their loud, fretful calls.

When not alarmed, the male seeks some exposed perch, where, with drooping tail, he gives vent to his exuberance in a voice of surprising volume and sweetness, for, with the exception of the cactus wrens, the whole wren family is famous for the brilliancy of its songs. Even the familiar loud, bubbling, gurgling song of the house wren sinks into insignificance when compared with the bold, ringing songs of the Carolina and canyon wrens or the roundelay of the winter wren. As with most birds, the song is usually confined to the male, but certain tropical species have the delightful habit of singing in duet. L. A. Fuertes, the well-known bird artist, in some pleasing essays entitled "Impressions of the Voices of Tropical Birds," gives us a vivid picture of these birds in action:

"This counter-singing by the female, so far as I am aware, is not generally known among birds, but it is cer-



tainly practised by this species (*Heleodytes bicolor*), as well as by all forms I know of, *Phengopedius*, *Henicorhina*, and *Donacobius*. In all these cases the birds sit close together, the male a little above the female, and his song is usually louder and more brilliant than hers. *Heleodytes bicolor* gurgles a loud, clear, oriole-like 'Keep your feet wet.' The female, three inches below and a little to one side, parallels this advice with an evenly timed 'What d'you care?' in perfect unison usually with the reiterated phrases of her mate. *Donacobius* does it somewhat differently, as the female only says 'wank, wank, wank,' while the male sits just above and sings almost exactly like a cardinal, or a boy whistling loudly to his dog, 'hui, hui, hui.' If the male gives only three phrases, so with the female; if, however, the male repeats his whistle a dozen times, the female begins and ends in exact time with him."

As suggested in the first paragraph, the nests of most wrens are placed in holes, either in hollow limbs, in crev-



A HOME DESPOILED

A bumble bee has here utilized the nest of a marsh wren instead of that of a meadow mouse, as is his custom. A broken eggshell tells of the former occupant—a cell of honey possibilities for the future. The bee constructed an inner roof over the chamber containing the honey cell.

short radius, although in late summer and early fall, with their energy not yet failing even after rearing two broods of young, they may scatter their nests wherever the spirit seems to move them. The reason for building these duplicate nests, as suggested in *AMERICAN FORESTRY* for December, 1916, probably had its origin in the effort of the male to secure more than one mate, and indicates that the

ices in the rocks, in cran- nies about buildings, or in nesting boxes erected for them. Some species, however, like the marsh wrens, build globular structures suspended in the reeds of the marshes, while the cactus wren makes an enormous structure of thorny twigs, placing it well within the heart of a Spanish bayonet or branching cactus.

The energy and industry of wrens find expression for itself in the building of duplicate nests. Not content with having completed one nest, many species, if not all, continue to carry material until half a dozen nests may be constructed. If they are hole-nesting species, every cranny in the vicinity will be stuffed full of sticks. If they are marsh wrens, they will place their globular structures usually within a



A MARSH WREN AT ITS NEST

A long-billed marsh wren at its globular nest hung in the cat-tails of the marsh. The opening is in one side.



THE BEAUTIFUL LITTLE SHORT-BILLED MARSH WREN

The bird at its nest in the sedges. This species does not frequent the deep-water marshes, but prefers the sedgy borders or even wet meadows.

wren progenitors were normally polygamous. That house wrens, and possibly others, still are polygamous when opportunity affords we now have considerable proof (*Ibid.*).

The irrepressible energy of the wrens likewise shows itself in the size of their families, for the eggs usually number six to eight instead of the three or four of most birds. They vary in color, with the different species, from the pure white ones of the short-billed marsh wren to those of the long-billed species which are so thickly speckled as to appear almost brown.

Wrens are almost entirely insectivorous birds, showing but little selection in the "bugs" they eat so long as they are sufficiently abundant to satisfy their insatiable appetites and those of their numerous young. How plen-

tinged blackbird's nest and deliberately peck holes in the eggs. I have found the eggs of Virginia and Sora rails with similar holes punched in them, and Dr. Chapman, in his charming book, "Bird Studies with a Camera," tells of watching a marsh wren, in a similar way, destroying the eggs of a least bittern. The familiar little

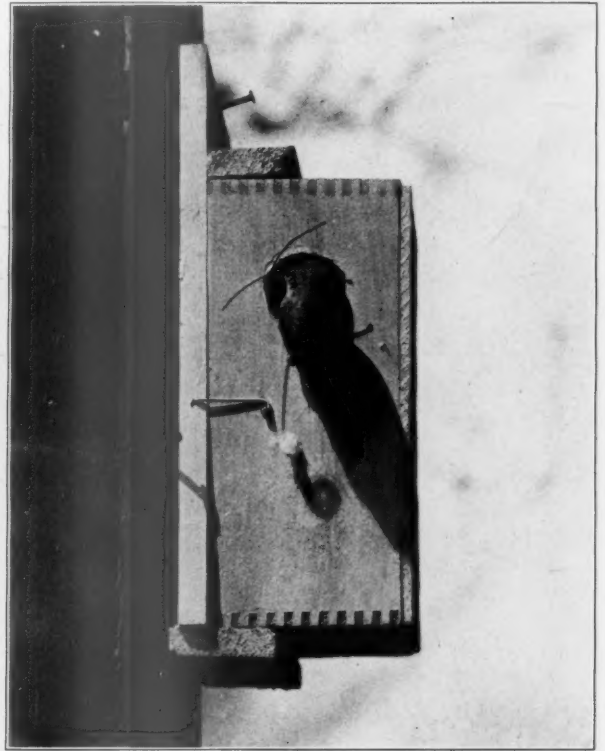


CHIPS FROM THE OLD BLOCK

Impatient and fretful—young wrens insist on being fed over 500 times a day, and one case is on record of a family which was fed 1217 times in one day.

tiful insects must be in order to maintain a wren family and how many pests are destroyed by these birds, one is better able to judge after watching the parent birds feed their young. It is by no means exceptional for them to feed their young from 500 to 700 times a day, while one instance is on record (see *The Auk*, January, 1917) of a single male wren (the female having been killed) which fed its young 1217 times during the fifteen hours and forty-five minutes of daylight.

There is but one blot on the name of the wren family: they are exceedingly mischievous. This sometimes results in disaster to their neighbors. I have seen a long-billed marsh wren, for example, perch on the edge of a red-



GETTING READY FOR SUMMER

Much skill and ingenuity are often required to get some of the larger sticks into the box, yet the house wrens persist in using just such materials.

house wren, likewise, sometimes indulges this egg-destroying habit. I once watched a male house wren go from the box where he was nesting to one occupied by a house sparrow, disappear for a moment, and then come out with a sparrow's egg in his bill. This he dropped and watched it fall until it broke on a porch roof below. He then dodged back into the nest and repeated the performance until all five eggs lay in fragments, when he flew to the nearest branch and burst into a triumphant song.

If the wrens practised this habit on house sparrows alone, we could only praise them, but, unfortunately, almost any other birds, particularly hole-nesting species, nesting in the near vicinity are likely to be treated in the same way. It is almost useless to try to attract other birds or to put up bird houses within fifty feet of a box occupied by wrens. Wrens and bluebirds seem bitterest enemies, and where they do nest fairly close together the bluebird is ever on the alert to chase the wren.

The *house wren* is the commonest and most widely distributed of all the wrens, some form of it being found throughout North and South America from Quebec to Argentina. It is uniform dark brown above, faintly

barred with black, and brownish gray below. It is smaller than the Carolina wren, which is more rufous and has a light line over its eye; it is larger than the winter wren, which is more heavily barred and has much darker underparts, but it is very similar to the Bewick's wren. This bird, however, has a light line over its eye, as has the Carolina wren, and light spots on the corners

lap except in the Alleghenies, for the winter wren is a Canadian species, while the Carolina wren is a southern bird occurring only occasionally as far north as New York and New England. In the fall, however, the winter wren migrates southward, some as far as Texas and northern Florida, and at this season all four kinds, as well as the two species of marsh wrens, may be found in the Southern States.

The *long-billed marsh wren* is the commoner of the two latter, frequenting the cat-tails and sedges of marshes bordering lakes, creeks, or sloughs, where its incessant song is always heard. Even during the hours of darkness, when most birds are quiet, the marshes will often resound with a chorus of marsh wrens. At such times it sounds as if Dame Nature were keeping late hours and had brought out innumerable tiny, ill-working



THE DUMMY NEST—A PECULIARITY OF THE WREN

A dummy nest of a long-billed marsh wren. All of the wrens build duplicate nests—possibly an indication of a former polygamous habit.

of its tail. So similar are all wrens to one another in size and color that it is much easier to identify them by their songs, which are distinctly different.

Both the house wren and the Bewick wren are fond of the habitations of mankind and are quick to avail themselves of nesting boxes put up for them, the house wren from Quebec to Virginia, the Bewick's wren from central Pennsylvania to South Carolina. They can be attracted even to the heart of large cities more successfully than any other birds because the opening in the nesting box need not be larger than an inch in diameter, and this will not admit sparrows or starlings, which, by usurping all available nesting sites, have done so much toward driving the hole-nesting species away from the cities. It is best to place the boxes on poles in the sun or light shade, although the wrens are not so particular in this respect as the other "nesting-box birds," and will take with equal readiness a box on the porch or in the centre of a tree.

The *winter wren* and the *Carolina wren* are both woodland species, but their breeding ranges do not over-



EGGS OF THE LONG-BILLED MARSH WREN

A section of a long-billed marsh wren's nest, showing the heavily spotted eggs. Those of the short-billed species are pure white and other species show all gradations in between.

sewing machines. Often the wrens seem to be carried away by the exuberance of their song, and, springing from the flags, they seem actually to explode upward. With their feathers shaken out, their short wings vibrating, their cocky tails tilted far forward over their plump little bodies, they look like animated cotton bolls.

The *short-billed marsh wren* is much yellower in general appearance than his dark, long-billed brother, and is seldom found in the deep-water marshes, for it prefers the sedgy borders of such or even wet meadows. It is ordinarily very mouse-like in its habits, running about among the tangled sedges, and would seldom be seen were it not for the fact that whenever any one approaches it climbs at once the highest reed in the vicinity to scold him for venturing so far from sidewalks and pavements. Its song is little more than a repetition of its call, like the



sound produced by striking two pebbles rapidly together, ending with more of a grating sound.

In the arid regions of the West dwells the largest and most unwren-like of all the wrens, the *cactus wren*. It is a gray bird with a white spotted breast whose large, retort-shaped nests are one of the most characteristic sights of the cactus country. Its song is the least musical of any member of the family, although it is given in characteristic wren fashion, with the tail drooping and the head thrown back.

In the dry, rock-bound regions of the West, where most bird life is scarce, lives the *rock wren*, whose curious tinkling song is one of the few redeeming

features of the desolate rock slides of the mountains.

In the canyons it is the song of the *canyon wren* that so frequently causes the rocks to reverberate with wild ringing notes. The bugler, it is sometimes called, but a tiny bugler indeed, less than six inches in length and so inconspicuous that were it not for its white throat it would escape unseen.

The *Parkman wren* and the *Vigors wren* of the Pacific coast region are the western representatives of the eastern house wren and the Bewick's wren. The common wren of Europe and the British Islands, or Jenny wren, as it is often called, is a species very similar to our winter wren in color, song, and habits.

## THE DEADLY MANZANILLO

BY FRANK COYNE

LITERATURE on the tropics abounds with stories of poisonous plants and trees, and to this beautiful tree, arching many a roadway with its glossy green leaves and rose-tinted flowers, has been ascribed



MANZANILLO GROVE, CURACAO, DUTCH WEST INDIES

This beautiful little grove belies the deadly reputation which tradition has attached to the manzanillo—that he who partakes of the fruit, or sleeps under the trees, is likely to sleep forever.

the deadly poisonous properties of the far-famed Upas tree of the East.

To the fruit of this tree, more than to the effect of its foliage, is due its evil name. Manzanillo in Spanish means "little apple," and in the Papiamentto tongue of the blacks of Curaçao, Dutch West Indies, living in their little thatched huts, the name Manzanillo is pronounced but slightly differently from the Spanish.

It has been stated by Spanish writers that if one remains under its shade for a few hours or sleeps there death is likely to follow, or that even if the unfortunate escapes death the body will become a mass of running sores. The deleterious properties of the shade of this

tree have, however, been greatly exaggerated, and as for the actual poisonous effect of the leaves and shade considerable diversity of opinion still exists, as is the case with the poison ivy of the States.

The small, apple-shaped fruits have tempted many a stranger to a much-regretted meal. As recently as the summer of 1916 an officer of a Dutch steamer had a narrow escape from serious poisoning, emetics and stomach pumps alone saving his life. Some 32 years ago 54 members of the crew of a German ship were taken to the local hospital, all very sick from having eaten the fruit of the Manzanillo. Five of this number died and the rest after serious illness for several weeks recovered.

As is the case with the question of the leaves and shade, there are many accounts of the effect of the fruit. To quote from one writer, "A fish which eats the fruit becomes infected, the gills becoming yellow and black, and one who eats the fish in this state is said to fall into a profound lethargy, with a general relaxation of all the limbs, according to the amount eaten."

The tree when cut exudes a quantity of white, milky juice, in the same manner as the common rubber-tree, and to most persons this juice has the same effect as our poison-ivy. However, if this acrid milky juice reaches the delicate membranes of the eye temporary and often permanent blindness is sure to follow.

The Manzanillo is a native of the West Indian Islands and is usually found in moist situations. The accompanying picture shows a pure stand of the Manzanillo, fringing the banks of a small stream on the Island of Curaçao.

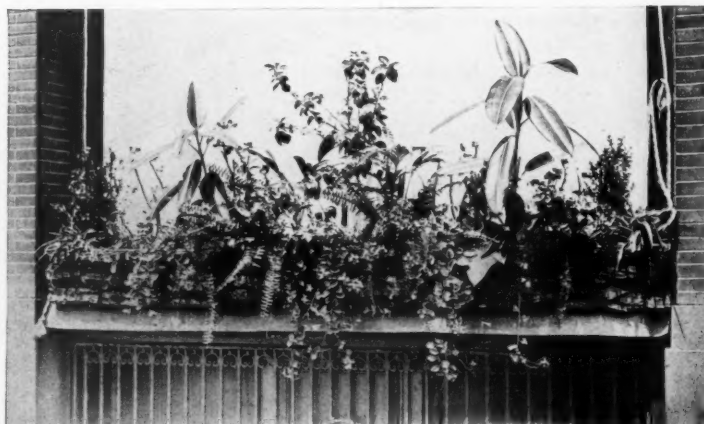
IN response to an inquiry from the National Wool Growers' Association, the Forest Service announced that stock growers having National Forest grazing preferences will be permitted, if they enlist in the army or navy, to retain their preferences without use of the range during the period of enlistment. Those wishing to avail themselves of this privilege will file a statement similar to that now required of State and Federal employees who wish to discontinue use of the range during their term of service without losing their preferences.

## WINDOW GARDEN ATTRactions

By C. W. H. DOUGLASS

**T**HE window box, as a means of relieving and beautifying the stern face of the modern office building, is becoming more and more popular as people realize that not only is it an inspiration and pleasure, but also has a practical value. Numerous observations have shown that the use of plants in this way makes an excellent advertisement, and the effect upon employees within whose range of vision the plants are placed is wholesome and conducive to better work.

Developing a system of parks, beautify-



*Courtesy of the Missouri Botanical Garden.*

### AN INFORMAL ARRANGEMENT OF FLOWERS IN A BARK-COVERED BOX

This window box, covered with bark and filled with Boston fern, anthericum, boxwood, rubber plant, vinca major, Kentia palm, geranium and hibiscus, makes a very attractive window garden.

tal trees or shrubs at the entrances and the window boxes.

Because the windows far outnumber the entrances, the window box is the more important of the two. At the same time it offers a much greater opportunity for variety in decoration. It may be a riot of color or a dignified and unobtrusive bit of decoration. And with the changes of season an endless variety of plants may be used in their most beautiful stages of development and bloom.

Good taste must of course be exercised in selecting the type and size of box to be used. Boxes made of wood are most popular because of their light weight and relative cheapness as compared with those made of concrete, terra cotta, or vitrified clay. Cypress, redwood, cedar, chestnut,



*Courtesy of the Missouri Botanical Garden.*

### A MORE FORMAL ARRANGEMENT, IN A BOX WITH SEVERER LINES

This box is arranged to give a slightly more formal effect than that above. The plants are pandanus veitchii, caladium, canna, English ivy and vinca major.

ing the grounds in close proximity to public buildings, encouraging the decoration of the home grounds, and adding a touch of softening decoration to the buildings in the business section are all factors in the problem of beautifying a city. The last one is the least developed, due no doubt to a lack of proper appreciation of the results that can be attained as well as to the inherent difficulties presented by this type of building. There is no possibility, except in rare cases, of planting trees to grace the view because of lack of space. Likewise, the use of shrubbery is impossible, and climbing vines, which have such a softening effect, have no place to take root. The only means remaining for decorating the office building are the tubbed ornamen-



*Courtesy of the Missouri Botanical Garden.*

### AN ARTISTIC GROUPING IN A BOX COVERED WITH BIRCH BARK

Vinca major, asparagus sprengeri, petunia, vinca rosea, coleus and Boston fern in a window box made of wood and covered with birch bark. This gives a good idea of the effect obtained by placing the plants close together in the box.



*Courtesy of the Missouri Botanical Garden.*

#### A BEAUTIFUL PLANTING IN A METAL WINDOW BOX

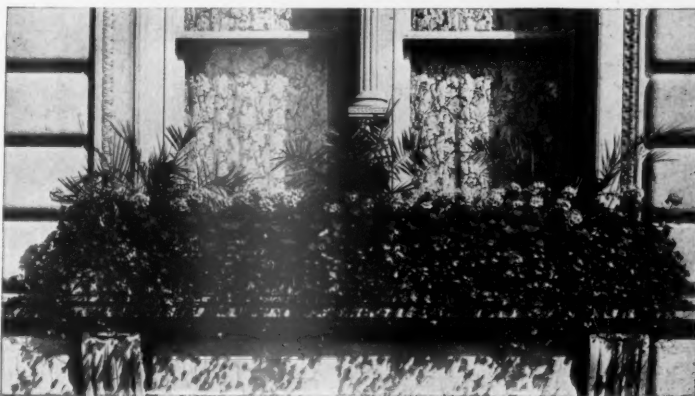
A metal box containing hibiscus, crotons, vinca major, dracena terminalis and pandanus veitchii. The trailing vines help to soften the hard, abruptly-angled lines of the building, yet not so profuse as to give a "weepy" effect.

and several other woods are durable in contact with air or soil, and a box made of any one of them, thoroughly painted both inside and outside, will last a long time. Bark of the birch, hemlock, or cedar may be used with very good effect to cover the box. The depth of the receptacle should be at least six inches, and better results will be obtained if it is eight to ten inches deep. The width of the window ledge determines the width of the box, although from six to nine inches is considered best. Length is entirely dependent on convenience of handling. If the ledges are long, it is easier to handle the boxes if they are made up in short sections. Most ledges are built with an outward and downward slope, which makes it necessary to put strips under the outside edges of the box to keep

it level. It should also be anchored to the building by wires running to the window sills, or some other means, which will prevent it from slipping gradually or being blown off in a storm. Boxes in upper-story windows should be equipped with drip-pans to prevent leakage of water and consequent staining of the building by the minerals dissolved in the water during its passage through the earth in the box.

For the best growth of the plants a fibrous loam soil is best. Too much clay or too much sand will be detrimental.

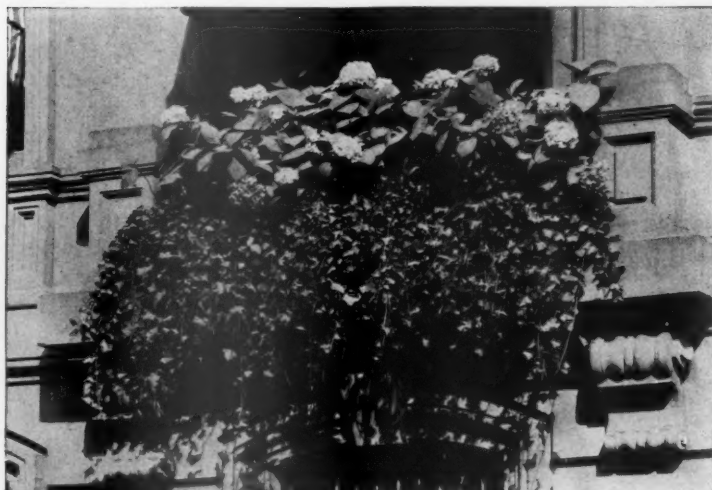
The soil will need enriching, and for this purpose thoroughly rotted stable manure is best. It should be dried and crumbled into powder and then mixed with the soil in the proportion of one part of manure



*Courtesy of the Missouri Botanical Garden.*

#### A MOST EFFECTIVE WINDOW GARDEN

This beautiful window garden makes a very attractive decoration for the high-class apartment hotel. The English ivy, completely covering the box, makes a background against which the flowers of the geranium show to best advantage. The date palms add a desirable touch of formality.



*Courtesy of the Missouri Botanical Garden.*

#### ANOTHER PLAN FOR A WINDOW GARDEN

The architecture of this building prevents the use of a long window box. Hydrangeas and English ivy here combine splendidly in an attractive bit of decoration, using the short but comparatively deep space available to the best advantage.

to from two to six parts of soil. This fining of the manure by drying and powdering, and thoroughly mixing with the soil, is considered very important in securing the most luxurious plant growth.

The drainage of the box is very important, although it will be more likely to suffer because of too little moisture rather than too much; nevertheless, if no means is provided for getting rid of surplus water, except evaporation, the plants will suffer. The bottom of the box should be perforated with a number of half-inch holes about six inches apart, and these partly covered with pieces of crock placed curved side up. Some people get best results by filling the box an inch or an inch and a half deep with pieces of broken crock, then throwing the soil in on top, taking care not to pack it.

The success or failure of the box very often depends on the watering or lack of it.



The frequency of watering can only be determined by actual practice, being dependent on atmospheric conditions, soil, sunlight, wind, etc. During average summer weather the plants should be watered once a day, and this should be done after sunset if possible to prevent scalding of the plants. The foliage should be washed in the process of watering to keep the leaves clear of dust, which clogs the air pores, to the detriment of the plants.

The red spider and the green aphid are the chief insect enemies that are liable to attack plants. A thorough syringing of the foliage on both sides will eliminate the red spider, and spraying with a tobacco solution eradicates the aphid.

In selecting the plants to be used in the window boxes, special attention must be given to the amount of sunshine they receive. All plants require plenty of light, but some make lesser demands for it than others. Plants which do not demand the maximum amount can be used on the north side of

buildings or in shaded situations. It is easy to overdo the use of certain conspicuous plants of trailing habit, which give an undesirable "weepy" effect, due to the great profusion of hanging vines. Color combinations are important, of course, and the colors of blossoms must be considered in selecting the plants. Against light stone or stucco, red, purple, or scarlet will look well, and blues, yellows, and whites with as much green as possible as a background make a pretty contrast with the red brick building. Flowering plants should possess the qualities of rapid development and profuse-

ness and continuity of bloom. The succession of bloom may be carried out by filling the boxes in the spring with pansies and English daisies, and following these with foliage and flowering plants lasting throughout the summer.

The following varieties of annual flowering plants

are specially suitable for window gardens: *Ageratum*, a compact-growing, hardy plant, about one foot in height and producing a constant succession of white, light blue, or purple flowers; *Asters*, although more easily grown in the open ground than in boxes, and having a short season of bloom, will thrive in the window garden; *Calceola*, a slender, graceful plant, blooming persistently, growing about sixteen inches high and bearing tassel-shaped, bright orange-colored flowers; *Calendula* or *Marigold*, a rather coarse plant from ten to fourteen inches tall and producing large yellow flowers; *Candytuft*, a hardy, easily grown plant six to sixteen inches high and bearing abundant clusters of white or purple



*Courtesy of the Missouri Botanical Garden.*

#### EFFECTIVE ARRANGEMENT FOR AN ENTRANCE

The fresh, rich green of the English ivy and geraniums in the boxes, and the bay tree in the tub, makes an attractive contrast with hot pavements and the severe architectural design of the modern office building. The tired business man has a springier step and a keener light in his eye when working in such an atmosphere—such is the subtle, scarcely to be observed effect of nature's living plants.

flowers; *California poppy*, an open trailer and a persistent though not abundant bloomer; *Chinese pink*, a persistent bloomer with flowers of brilliant color; *Dianthus*, a brilliant-hued garden pink which is not easily grown, but is so attractive as to warrant the effort; *Cobelia*, a slender-stemmed, delicately graceful plant bearing small, beautiful blue flowers, and very desirable for the window box because of its graceful habit of growth and constant bloom; *Mignonette*, one of the most fragrant of our common flowers, and one that does well in the window box; *Nasturtium*, an excel-

lent plant for the window box, as its graceful habit of growth and brilliant flowers are very effective; no manure should be added to the soil for nasturtiums; Petunia, a plant which produces a succession of bright-colored, broad, trumpet-shaped flowers which give brilliancy to any collection; Snapdragon, a rather slow plant to bloom, but one that is attractive while growing and makes a good background for the other plants of the collection and is very brilliant and showy when it does bloom; Sweet Alyssum, a low-growing, spreading plant, with small, white, sweet-scented flowers, produced in abundance; Verbena, a trailer which covers two to six square feet and is an abundant and persistent bloomer; Zinnia, a strong, rather coarse-growing plant, but very hardy and a persistent bloomer.

There are many other plants which are suitable for window-box use. With any combination, certain foliage plants should be used to furnish a sufficient filler or background for the flowers. Among these asparagus, red and green dracena, English ivy, sword fern, Whitmani fern, pandanus, vinca, and wandering Jew are most adaptable.

The great range of available plants makes it impossible to indicate exactly what the arrangement and combinations should be, but the following examples are suggested:

## SUNNY LOCATION

1. Vinca major—front.  
Petunia—filler.  
Ageratum—filler.  
Vinca Rosea—points.
2. English ivy—front.  
Asparagus Sprengeri—front.  
Geranium—filler.  
Lantana—filler.  
Hibiscus—points.
3. Wandering Jew—front.  
Asparagus Sprengeri—front.  
Verbena—filler.  
Petunia—filler.  
Marigold—filler.  
Croton—filler.

## SHADY LOCATION

1. Asparagus Sprengeri—front.  
Dracena terminalis—points.  
Boston fern—filler.
2. English ivy—front.  
Coleus—filler.  
Boston fern—filler.  
Pandanus Veitchii—points.
3. German ivy—front.  
Asparagus Sprengeri—front.  
Hibiscus—points.  
Whitmani fern—filler.  
Croton—filler.

## A FORESTRY CONFERENCE

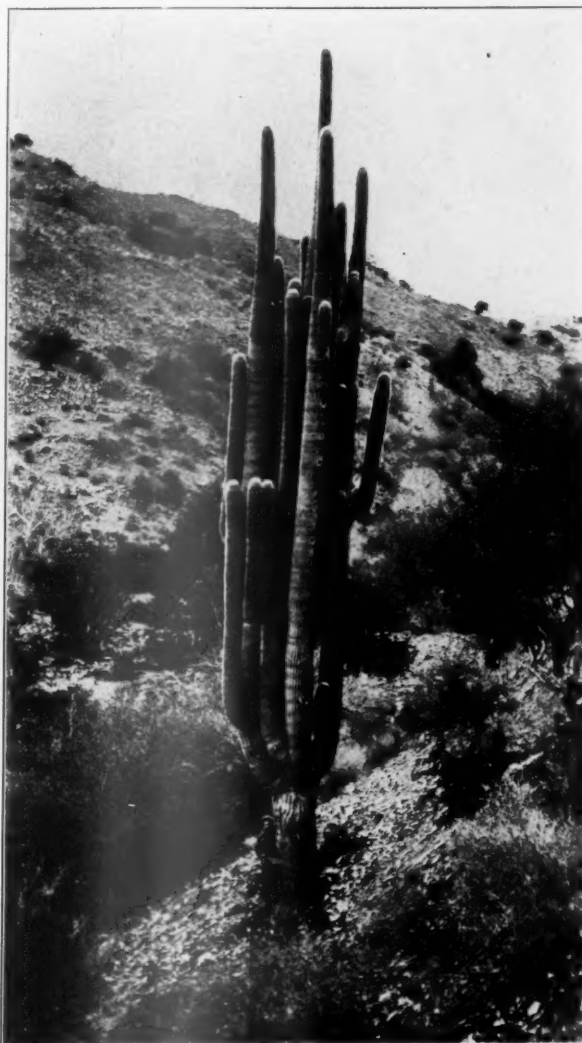
A FORESTRY conference held at Pittsburgh, June 21, 22 and 23, was well attended by members of the American Forestry Association, Pennsylvania State Forestry Association, Canadian Forestry Association and other organizations interested in forest conservation. Three full and profitable days were spent in hearing addresses, in viewing municipal plantings, nurseries and examining forested lands in various sections of the state near Pittsburgh. Dr. Henry S. Drinker, president of the Pennsylvania Forestry Association and a director of the American Forestry Association, presided at the sessions. Owing to illness Mr. Charles Lathrop Pack, president of the American Forestry Association and also president of the National Emergency Food Garden Commission, was unable to be present, but sent an address on food conservation to be read.

## A GIANT CACTUS

By Stanley F. Wilson

THIS giant cactus (*Cereus giganteus*) was found at an elevation of 3690 feet twenty-five miles northeast of Tucson at the border of the Santa Catalina Division of the Coronado National Forest.

Its height is forty-five feet; its diameter breast-high, twenty-six inches. There are more than fifty branches.



ARIZONA'S GIANT CACTUS

This great plant, weighing five tons, is forty-five feet high and has a diameter of twenty-six inches.

It is estimated that the weight of the plant is more than five tons. Its age is unknown, but must be very great. The dots are woodpecker holes. These birds delight in the giant cactus. It furnishes a fortified residence for birds of many species.

Most people see only the desert country in travelling through Arizona. This is because the railroads follow the lower levels. How many people would believe that on the summit of the Catalina Mountains, only nine miles from this cactus, are to be found giant firs and pines, Alpine wild flowers, a well-stocked trout stream, an ideal summer climate, and a rapidly growing summer colony where people take refuge from the heat of the desert?

# Forestry for Boys and Girls

by Bristow Adams

## SOME OF THE WOODSIDE FOODS



WE are all trying to do our bit in one way or another. Our best way seems to be in the food campaign. Mother tries wheatless meals on us and we are even going a step further and eating dinners that are both meatless and wheatless. It is something of a game with us and we make jokes about it; but we have the grimmest sort of humor in the thought that war is not only making wheatless and meatless dinners but also in many parts of Europe is making "eatless" meals. Mother was much cast down over the first trial at a meal without wheat or meat when she served us macaroni and cheese and corn muffins. It was a special "company" dinner, with green peas, fruit salad, ice-cream and macaroons. Good enough for Mr. Hoover or anybody! But when our Lady of the Home realized that macaroni is made of wheat it 'most broke her heart. However, it was a start, and from that start we have had many another such meal, equally as good and without the wheat that the Allies need.

FEW of us know how much food the woods hold for us: Wild strawberries, blackberries, dewberries, raspberries, huckleberries. The so-called weeds are good; and there must have been a time when man first tried to eat rhubarb and asparagus. Lettuce is undoubtedly developed from a plant pretty close to the dandelion. We have eaten with relish the young shoots of the poke-berry, or "poke-root." Burdock, wild mustard, purslane and a lot of others are worth trying, though it is unwise to eat strange roots or plants with which one is not familiar. The deadly water-hemlock, or

cicuta, is not uncommon and it looks just as good to eat as many another herb.

For myself, I cannot raise any very great stir of enthusiasm for most of these "wild greens." One "mess" of dandelions will do me for a long time, and two are about all I can stand for each season. At least, that is the way I feel now; they say hunger may make a man do anything.

THERE is a lot of fun, as well as thrift, in going to the woods for berries, or rather to the pastures at the edge of the woods. A day in the blackberries is one of adventure. We are supposed to bring in our cups of berries as the cups are filled, mother being in charge of the central station, and of the lunch. Always there is a clamor for that lunch long before lunch time.

Toto comes in with a cup that is not very full and a wail that he is on the edge of starvation. Yet he is smeared from ear to ear with the rich juice of blackberries.

"I only ate one," he declares in reply to an accusing finger.

"That sounds like bad grammar," says father, butting in from the heights of great wisdom; "but it may be all right. He 'only ate one' and the rest were used for a facial massage."

Toto rolls his big eyes, as he always does, when puzzled.

"Maybe I did eat more than one," he admits, "but a fellow's got to do something when he's hungry and they won't give him anything to eat."

This appeal is too much. So the baskets are opened and the feast is spread; then a munching in silent contentment, and afterwards a rest in the shade with every one of us too full to move with comfort; afterwards more berry-picking; the finding of a song-sparrow's nest with young in it. When the little birds stretch their necks and open their mouths that look almost as big





as the nest itself, Toto wants to feed them each a ripe blackberry. We tell him that they much prefer the insects which the mother bird brings. We see her hovering near, and stand back to watch how she does it. Just as soon as they hear her come, up pop the heads and wide-open fly the mouths; in goes the bug and away flies the parent bird in the task that does not stop while daylight lasts. Everywhere the search for food, life's great need!

Trudging home toward supper-time as the day begins to grow cooler, we are tired but happy. Fresh berries and cream with bread and butter for the evening meal; early good-nights, and then comes wholesome rest. Next day appetizing odors of the cooking fruit, for jellies, for preserves, or for canned berries to go in next winter's pies. Mother takes us in to show her proud rows of neatly labeled jars.

OUT in the yard are trays of fruit and vegetables drying. This drying is worth more than most folks realize. It is so easy to do! An electric fan and some shallow trays make as good a drier as one could wish. Yet the fan is not necessary. The heat of the sun is enough, and is better than artificial heat, which makes the food lose color and flavor and even some of its food value.

Here are some of the things that our Home-maker has found out:

Strawberries and asparagus are no good dried; the strawberries make a pasty mush, and the asparagus goes into tough strings that furnish a good fiber but mighty little food.

All the small fruits, including rhubarb, can be dried with success. Raspberries, blackberries, loganberries, huckleberries seem to go away to a dry mass of seeds and skins, but they cook back to their original color, and flavor, and volume. Drying is a good method this year because it does not have to depend on a supply of cans.

Vegetables should be sliced before drying, and this is true, of course, of the larger fruits, such as apples or peaches. If there is no root-cellar or root-pit, potatoes, carrots, and turnips may be sliced and dried. Onions, string beans, lima

beans, peas, spinach, cauliflower, cabbage, Brussels sprouts and okra dry perfectly.

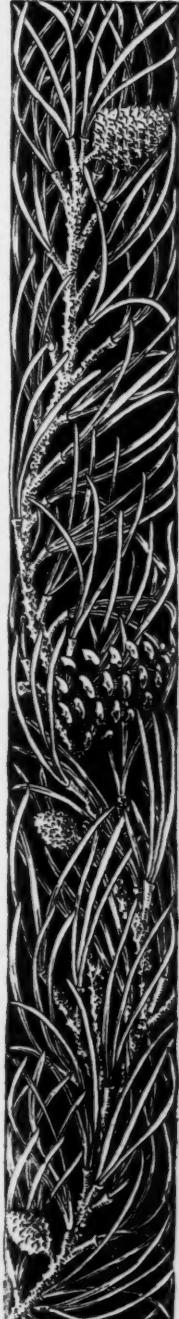
Sweet corn, white potatoes and sweet potatoes need to be cooked before drying, though the cooking does not have to be thorough. A short plunging into boiling water seems to be enough. If they are not cooked they lose their color and may not keep.

DYING is not without its fun, even for the children. They like to see the orderly trays under their mosquito-nettings out in the sun. There is excitement in the scurry to get the trays under cover when a sudden summer shower comes. In spite of the mosquito-net, many insects that like sweets come to the drying trays, and Everett has added some rare kinds to his sets of butterflies.

Once he had a trying result when his joking uncle told him that he could catch them easily if he could put salt on their tails. Everett has a most serious mind and an earnest nature. He got the big salt box out of the kitchen; then, when the butterflies were rather thickly gathered over the netting, he let fly with a broadcast deluge of salt that ought to have caught them all. Mother was riled for a time; but it was her own brother who was to blame, so we told them to fight it out in their own family, and they soon saw the joke, even though it was on them.

AS I said in the beginning, we have fun over the food situation. It is best that we should while we can; but in the meantime we must see its serious side. It is very serious for our friends across the water now; it is going to be serious for us. The best of it all is that each one can do his part—man, woman and child. In our own house we are eating less, and we are just as well as we were before, or even have better health. The plates that go to the kitchen go there empty. No more crusts and bits of food for the garbage can; no half-inch of milk left in the bottom of the glass.

"That would feed a Belgian kiddie!" cry all the other children if one of ours leaves a scrap of good food; and the morsel is eaten—or saved, by and for the same child—out of very shame.



## SOME INTERESTING TREES OF SINGULAR GROWTH



NATURAL GRAFT OF BEECH



"SIAMESE TWIN" SYCAMORE



NATURAL AFFINITIES



GRAFT OF A BEAUTIFUL BEECH

THE first picture, of natural graft of beech, was sent to *AMERICAN FORESTRY* by Mr. J. G. Brown, and was taken by him during the summer of 1916 about a mile southeast of Palisade Park, a summer resort near South Haven, Michigan, in a grove of soft maples bordering an old oxbow of Brandywine Creek, while he was studying the physiographic ecology of the region in a class of the University of Chicago.

Near West Milford, in West Virginia, on the banks of the West Fork River, is found growing the remarkable specimen of sycamore which we have dubbed the "Siamese Twin." A close examination of the photograph will show that the trunks are joined at three different

points. The gentleman is standing on the middle connecting limb, or what might be called the "second floor."

There seems to be no reason for the white oaks in the next picture to have grown together—they just did.

The last photograph is another instance of natural graft of beech, and quite a striking example of peculiar growth. The tree started out to be a twin, and then changed its mind and grew together again, its health and beauty unimpaired by its freaky growth.

This photograph, and the ones of the sycamore and the white oaks, were all taken within a mile of each other, and were sent to *AMERICAN FORESTRY* by Mr. J. Franklin McConkey.

THE largest number of sheep grazed on any single National Forest is 315,740, finding pasturage on the Humboldt in Nevada, while the largest number of cattle—75,818 head—is found on the Tonto in Arizona. The value of the average annual meat product of these two National Forests is estimated at \$2,000,000.

OF the 22,000,000 trees planted on the Pennsylvania State Forests to January 1, 1917, over 15,000,000, or about seventy-two per cent., are now living, according to a

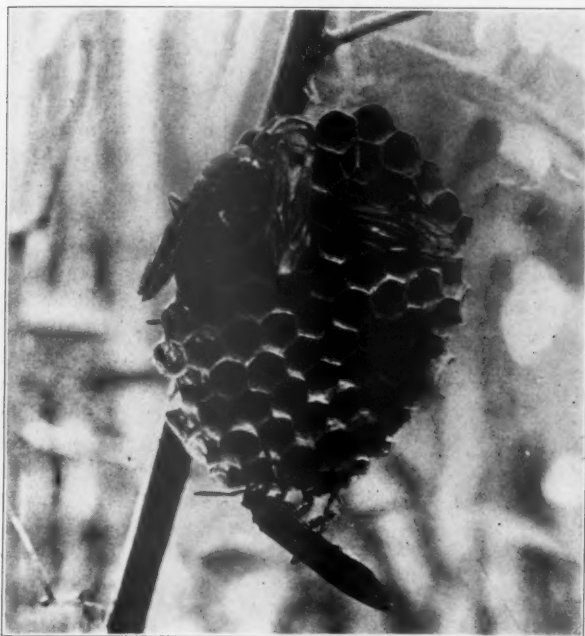
statement made by the Commissioner of Forestry. Figures are not available on the present status of the private plantations, but up to the end of 1916 about 3,000,000 seedlings were planted by corporations and individuals, and at least 2,000,000 should be in good condition now.

THE work of classifying and opening to homestead entry such lands in the National Forests as are chiefly valuable for agriculture is progressing rapidly. More than seventy million acres have been covered by field examinations and the final reports acted upon.

## PAPER-MAKING IN THE INSECT WORLD

BY DR. R. W. SHUFELDT, C.M.Z.S.

**A** MOST interesting volume might be written devoted exclusively to the achievements of many insects in the arts and trades, and the treatise would, in the matter of size, by no means be a booklet. When I say this, I do not refer to such structures as the cocoons spun by many caterpillars and the like; for the material used in their construction—that is the silk—is secreted by a special organ forming a part of the economy



THE NEST MOST OFTEN SEEN

FIG. 1.—Here we have several wasps of the common species in the eastern part of the United States, resting upon a small paper nest they have completed, in the cells of which the eggs of the insect have been deposited. The back of this nest, that is, the opposite side of the view given in the cut, is made fast to the twig of the bush selected by the builders by means of a strong little pedicle, made of the same material as the nest, only denser and darker. This is the only paper now being made in this country not costing more for production, claimed by the manufacturers, and not affected by the war in Europe.

of the animal. But, upon the other hand, the instances in the book could be confined to the work of such a remarkable insect mechanic as the carpenter bee—a species that cuts a tunnel for its home in solid wood, the entrance to which is almost a true circle half an inch in diameter, and the rest a tube several inches in length, of about the same diameter and quite cylindrical. With a brace and bit one can make a similar excavation; but should the tunnel made by the bee alter its direction, even for the eighth of an inch or less—as happens in some species—there is no tool that can accomplish what this insect does in its particular piece of carpentry. Then there are the remarkable cells of the mud-wasps, which one would have considerable difficulty in imitating with accuracy, to say nothing of the wax-combs of the honey bee, and an almost endless number of other structures made by representatives of various orders of the insect world.

Wonderful as many of these are, none are more so or more interesting than the various forms of paper nests constructed by certain species of hornets and wasps. Some of them are familiar to us as occurring in the insect fauna of the Atlantic seaboard states, and to these the present article will be confined, though there is a great temptation to refer to other examples found in various parts of the world, which are most extraordinary with respect to their nesting-habits.

We are all familiar with the common brown wasp, for there is hardly one who has not, at one time or another, been stung by one of them. It is the female of this species that constructs the paper nest, which contains the young wasps until the time has arrived for them to fly. When they are ready to build, they resort to places where they can find fibres of old wood; this they gnaw and knead until a grayish mass is manufactured which closely resembles *papier-maché* in color, consistency, and other properties. While this mass is being prepared, its adhesive quality is



THE NEST OF THE BLACK HORNET

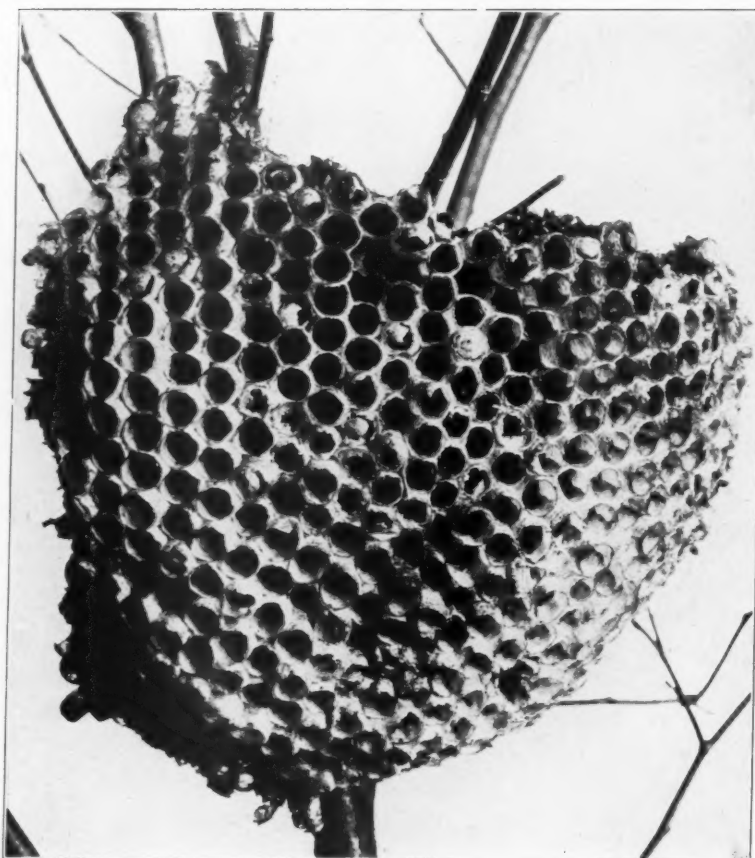
FIG. 2.—The nest shown in this illustration is made by the common black hornet of the Atlantic States; it is more or less fully described in the text of this article. These nests, or nests of this form, are often of great size—in fact, big enough to fill a bushel basket, or even larger. They contain a series, or tier of nests, quite similar to the ones shown in Fig. 1, only of greater size with respect to the diameter. Eventually, this series of nests, fastened together by a central pedicle in horizontal planes, is completely surrounded or housed in by a top-shaped structure, similar to the one shown in the illustration. These insects, upon being disturbed, fiercely resent it, and frequently their combined attacks are quite serious.



ensured by there being incorporated into it the secretion of the salivary glands of the insect.

It is with this material that the common brown wasp builds such a nest as shown in Figure 1. I photographed this specimen in the woods near Cabin John Bridge in Maryland, a few miles from Washington. Only three or four wasps were the proprietors here, and this structure was selected because it was small and showed so well the hexagonal paper cells for the young. Moreover, the nest was in a vertical position, which is by no means usual; as a rule they lie in the horizontal plane when finished. Along the old Georgetown Canal I saw recently, far up in a dogwood tree, one of the largest—indeed the very largest—specimen of the paper wasps' nest that I had ever seen. It certainly was a foot and a half in diameter, and covered with a very large colony of the insects. At this time they were busy depositing the single egg the female lays at the bottom of each cell. Then the aperture of each is sealed over with a paper, which I have always noticed is some four or five shades paler than that of which the nest is made. Several attempts to collect this fine specimen were failures, as the wasps were then in a very combative frame of mind. It is firmly attached to the twigs by its usual single, strong pedicle, far up in the top of the tree. Unlike the nest shown in Figure 1, it is tipped at an angle of forty-five degrees. In New England these brown wasps often build in the stone walls surrounding farm fields, or under fence-rails, and elsewhere.

The form of the nest is more or less circular in outline, though I have collected those which were oval, or even a bit triangular or oblong in shape. I have never met with one in which the openings of the cells faced upwards; if they were so built, the rain might get into the cells, and



A TYPICAL WASPS' NEST

FIG. 3.—Another species of these brown wasps build a large nest, of a form shown in this cut; they are abundant in many sections of the Middle Atlantic States, but are not usually seen until the leaves are all off the trees in early winter, at which time both young and old have all departed. In form, they are roughly circular or subcircular in outline; unhooused, and made up of a large number of cylindrical paper tubes, closely packed together and united in such a manner as to successfully resist tearing apart. This nest in its posterior aspect, which is concave, is united to a twig or shrub by a single, tough, paper pedicle, usually situated above the middle of the nest. This cut is a reduced reproduction of one of these structures which I photographed natural size, having collected it on the 5th of December, 1916, in southern Maryland. It was in a tree about thirty feet above the ground; it measured about 6×6 inches, and was made of over two hundred cells. Sometimes these nests are built in the tallest trees in the forest, and sometimes in a vine or shrub not five feet above the ground. Occasionally we find two or more in the same tree.

destroy the young as well as the nest. They often construct their nests under the eaves of various buildings, in the country or well within the city limits. In the forests they build in trees or shrubs, sometimes so close to the ground as to be in contact with it, while at other times as high up as fifty feet or more. The smallest nest of this hornet that I ever met with was no bigger than a boy's peg-top.

All of these paper nests, of both hornets and wasps, are composed of the same material, and constructed in the same manner. The paper, being manufactured from wood pulp, is quite durable, tough, and strong. If a nest be kept in a dry place indoors, it will last for ages and exhibit no sign of breaking down; one that I collected many years ago is still on the shelf of one of my bookcases. Brown wasps built that one; and the most interesting feature it presents is that it is a half circle in form, the cells on the long diameter being the deepest and largest, while those around the periphery are so very small and shallow as to be entirely useless, beyond finishing off the marginal curvature of the structure. Quite a few other insects also construct interesting forms of paper nests.

destroy the young as well as the nest.

A far more elaborate nest than the one just described is constructed by the paper hornet, an insect also very abundant in the eastern United States; these are frequently large enough to fill a bushel basket. Such a nest is shown in Figure 2, and I have cut out with a knife the near side of it, in order to expose the three tiers of nests inside, each of which is built precisely as the brown wasps build theirs. They are arranged one above the other, the whole having a paper structure built around it, usually top-shaped in outline, with a hole below and to one side, for the insects to go in and out of as occasion requires. This species

## PINE BLISTER DISEASE WORK PROGRESSES

THE organization of the campaign against the white pine blister disease has gone forward steadily.

Many of the state appropriations were delayed six weeks or two months beyond their ordinary course on account of the pressure of National Defence measures. Fortunately the season was much later than normally is the case. A few fruiting pine specimens were found early in May, but it was the middle of May before the pines in the heavily infected localities of New England showed an abundance of blisters. The first stage of the disease on currants and gooseberries was discovered on June 5, the same date on which it appeared last season. The second stage of the currant rust was found on June 13, ten days earlier than last year.

The results of scouting to date have shown conditions to be just what was feared last year as a result of the wide distribution of the blister disease on currants and gooseberries throughout New England. At all of the points where diseased native pines existed last year the disease was found to make steady progress. For instance, one tree in the Kittery Point infection area, 38 feet high, was being girdled on the main stem at a point 20 feet above ground where the circumference of the trunk was 23 inches. All of the side branches on this tree—more than 100—were infected with the blister rust, as the bright colored blisters plainly proved. In addition to the increased size of the infection areas at Kittery Point, Swansea, Massachusetts; Stratham, New Hampshire; Lyndonville and Woodstock, Vermont; Essex County, New York, and Norfolk, Connecticut, many new areas of infected pines, both planted and native, were found in these states. One of the most serious is at Intervale, New Hampshire, near the Cathedral Pines. On a pine hedge near the Cathedral Pines, 1021 infected branches were removed and about 90 infections taken from a single tree. On another property where there were a dozen heavily infected black currant bushes in a garden there were a number of infected pine trees about 40 feet distant. One of these trees, 6 feet high, had 26 separate blister rust infections and showed indications that many more infected branches were developing. Infected pines were found on other nearby properties and the pines of the whole region are apparently in the greatest immediate danger if not already hopelessly diseased.

Currants and gooseberries, both wild and cultivated, at this early date, are already heavily infected in regions where pine infection is plentiful. Currants and gooseberries in Maine are about as heavily infected now as they were last year in August and September. Between Brunswick and Bath, Maine, they are generally infected; that is, careful observation shows that it is safe to estimate that 90 per cent of all these plants are infected now. Many plants already have infection on practically every leaf. This condition existing so early in the season (the latter part of June) indicates that these plants must have been directly exposed to spores from pines. Infection is especially heavy on skunk currants.

Pine infection is well scattered between Brunswick and Bath. At Bath there exists a comparatively large area which contains at least 90 per cent of infected white pine trees. Many of these have fruited during the past season. On one young tree 35 infected branches were noted. The oldest infection found in the Bath area appears to have taken place about eight years ago, probably less.

The wild currant and gooseberry bushes along one side of the highway between the villages of Warren and Wentworth, Grafton County, New Hampshire, were examined; 91 per cent of the plants proved to be infected. In New York State pine infections were found scattered over a number of square miles of fine native pine growth in Essex County and infected currants have been found in Clinton and Niagara Counties. Only one new infection has been found in Pennsylvania, and Michigan has also been added to the list of infected states through diseased pine stock found in a nursery. In Minnesota five new points of infection have been found at Afton, Marine Mills, Pine Hollow (opposite Osceola, Wisconsin), at Franconia, and on the water supply reservation at Lake Vadnis.

Until recently considerable effort was expended in scouting localities where infection was known to exist last year and diseased pines were destroyed. The efforts during the balance of the summer will be confined principally to controlling the disease by destroying currants and gooseberries. The work of eradication is being pushed as rapidly as possible. In each of the New England States one or more areas of heavy pine growth have been selected for the destruction of all currants and gooseberries. These areas will serve to demonstrate the feasibility of controlling the disease and the boundaries of the areas will be extended as rapidly as possible. In New York the heavily infected pine area in Essex County is being isolated by pulling currants and gooseberries from a strip two miles wide which, when finished, will extend through the Ausable Valley, from the Canadian border to Lake George. Last year a strip of this character was made through Columbia County, New York, to stay the advance of the disease from Massachusetts. Later in the season this line probably will be extended northward through Rensselaer and Washington Counties to Lake George. A similar strip a mile wide is being cleared of currants and gooseberries from Lake Ontario to Niagara Falls and the southern extremity of Grant Island. This strip was cleared on the suggestion of the Canadian authorities, who are now completing the eradication of currants and gooseberries from a mile-wide strip along the Niagara River from Niagara-on-the-Lake to Fort Erie. A large force of scouts is engaged searching for the disease in all of the eastern states where the disease was not found last year, including the Southern, Rocky Mountain and Pacific Coast States where five-leaved pines are native, but special attention is being given outside of New England and New York to the Lake States.

# EDITORIAL

## ARKANSAS SUPPORTS THE NATIONAL FORESTS

**T**HE recent Legislature of Arkansas passed an Act authorizing the Federal Government to acquire by purchase lands within the State for National Forest purposes. This is simply another indication of the changing attitude towards National Forests in the West. Two National Forests were established in Arkansas several years ago, and ever since have been the butt of fierce attacks on the part of various congressmen from that State who sought to have them abolished and thrown open

to settlement and timber exploitation. Congress did not yield to this pressure, and examinations showed that the lands were not fitted for agriculture. Where any doubt existed as to this classification, the areas were eliminated.

By this recent action the people of Arkansas have at last placed the stamp of approval on the Forest administration. The law will enable the government to acquire much-needed areas within the forest boundaries and consolidate them for fire protection and the production of timber.

## A VISITATION AND A MORAL

**T**HE memory of the terrors of the Hinckley and Bandetti fires did more to prevent the passage of the Public Domain bill in the Minnesota Legislature, with its proposed disruption of the State Forest Service, than all other factors combined. As this is written, the State is again in the grip of the fire fiend. The dangers of these violent conflagrations, driven by the wind through the tops of trees, is extreme, wherever the country is comparatively flat and densely covered with timber or slash. They resemble the disastrous fires which at intervals destroy large districts in our big cities, in spite of the most thorough preparation and the high efficiency of the fire departments in those communities.

Perhaps this series of conflagrations will serve to impress still more firmly upon the public mind that the State Forester's Department must be kept as it is, absolutely free from politics, and furnished with the necessary funds and support to maintain at least the skeleton of an organization for controlling fire in the vast timber areas of northern Minnesota. Where short-sighted policy per-

mits this department to become the prey of spoilsmen, in that day the efficiency of the service ceases, and citizens of the north country are left to their own devices to cope, without direction or plan, with this monstrous enemy.

The State Legislature, through the action of the Senate, refused to sanction the restoration of the appropriations of the Forestry Department to the sum of \$75,000 from which they were reduced two years ago to half that amount. The overburdened state rangers, each one with over a million acres of territory to supervise, cannot possibly cope with the extreme danger of a dry season without more help. Yet recently the work and responsibilities of these men were greatly increased by imposing upon them duties formerly exercised by the surveyor generals of logs and lumber in order to save the State money.

If the State of Minnesota ever expects to be freed from the recurring blight of forest fires, it must be through the strengthening and upbuilding of her State Forestry Department, as at present constituted.

## COLORADO REDEEMS HERSELF

**A** POLICY so utterly opposed to the pioneer spirit of individualism as that set forth in the reservation and development of the National Forests was certain to arouse bitter opposition in the West. New ideas are not received cordially when they threaten to interfere with cherished personal privileges and business opportunities. Here was a plan apparently worthy to be classed as a product of the brain of some utterly impractical theorist. The Government actually proposed, in all seriousness, to set aside immense areas of public land as "Forest Reserves," for purposes but dimly comprehended, except that it was evident that no more timber claims could be located, nor "homesteads" filed on for the purpose of acquiring title to timber. For a while, even mining claims were prohibited, and grazing was prevented as being injurious to the forest.

Western people, imbued with the spirit of liberty and optimism, and impatient of restraint, accustomed to regard public lands as the great field for exploitation and development upon which the further progress of the states depended, instinctively protested against this policy, and this opposition was especially strong and bitter in Colorado.

But the founders of the National Forest policy were more far-seeing than the representatives of the pioneer area—which was already passing. They realized the evils of unrestricted private ownership, especially its effect upon the forests. They considered the effect of the forest cover upon the flow of water for irrigation, and the necessity for regulating the grazing upon these lands. Theirs was a new vision, of a future era when coöperation and the recognition of the rights of all classes of citizens would



supersede the somewhat brutal and blind policy of *laissez faire*—the old idea that by permitting the strongest, most able, and also the most unscrupulous and cunning to have their own way, the best results would be obtained.

Since this new doctrine did not contemplate depriving the public of the resources of these forest reservations, but rather strove to make them available, the public soon learned that under the rules and regulations worked out by the government, they could secure timber, graze their stock, prospect for and develop mines, and harness the national water powers, while at the same time the great farming interests observed that fire protection and the restoration of the forest cover on the watersheds controlling their supply of water for irrigation, was for the first time becoming efficient.

The crest of the opposition was reached in 1907, but two years after the transfer of the National Forests to the Department of Agriculture—and was due largely to the fear and wrath occasioned amongst the advocates of the old school by the rapid extension of National Forest areas in the two years preceding. In this year six states, Colorado leading, secured congressional action which put an end to the creation of further National Forests, except by specific authority of congress in the future.

For several years thereafter, the area of National Forests in these six states either remained stationary or diminished by elimination of areas unsuited to the purposes of the forests. Meanwhile, the real purposes behind the forest policies became more and more clearly comprehended by western people, and the great benefits

of intelligent and efficient administration spoke more forcibly than arguments.

In 1916 bills began to appear in congress authorizing the President to make additions to existing National Forests. For the most part these dealt with small areas, and were significant only as indicating the tremendous revolution in public attitude which has taken place in this decade toward the *ideas* embodied in the National Forest policy.

But it remained for Colorado to give expression to this current of opinion in a way that no one can mistake. In spite of opposition of a particularly virulent and vindictive character, the people of the agricultural districts, dependent upon the watersheds for their very existence, demanded and secured authority from congress for the addition of over half a million acres of public land to the Colorado and Pike National Forests. And in this they had the support of mining associations, county commissioners and every commercial interest in the district affected.

This country will never tolerate the substitution of an autocratic bureaucracy for the liberty of thought and action to which we are accustomed—but we are fast learning that our rights and our prosperity are best secured through an efficient public administration by trained experts, whose duty it is to carry out policies formulated to secure the greatest good to the greatest number. This new Service is responsive to popular demand, but is able to distinguish between the selfish desires of the few and the permanent benefits for the many. Its true spirit is coöperation—and coöperation will win.

## THE DIPLOMATIC FOREST RANGER

BY W. G. MORISON

THE work of a Forest Ranger or Guard during the fire season is, of course, taken up very largely in preventing fires. Since the greatest danger is from campers, hunters, and fishermen, who through carelessness or ignorance throw down lighted matches, cigarettes, etc., or build camp fires where they should not or go away leaving them burning, it is essential that they be warned, and it is equally important that they be warned in such a way that they will not take offence. I have known campers who have been left in a very antagonistic frame of mind by being told in a tactless way to be sure and not start a fire, and how not to start one, the law for such offence, etc., and consequently did not care much if one did start, and certainly would not have helped fight one unless forced into service by reciting the law to them, which is worse than not having them at all.

It is very easy to get the coöperation of most of the people who come into the woods for recreation (the natives of the woods usually are as anxious as the Forest officers to prevent fires) by several little ways without even letting them know that you are trying to do so, for instance: a Ranger or Guard sees a fisherman; he goes down towards him, and when he sees that he is seen, he

incidentally tells the fisherman thereby who he is, and probably has him thinking unconsciously of fire already. Having done this, he goes up and says, "Hello, had much luck?" and then engages in a conversation as to the pros and cons of fishing (no better way to please a man than by talking about the thing he is interested in at that particular moment). During the conversation he glances around as if looking for smoke (remember the idea is to get the fisherman's mind centred on smoke, and smoke means fire). After a while he says, "Well, I guess I will have to be getting on, pretty bad time for fire." The fisherman then probably says something such as "Had many this year?" or "Has there been much damage done around here?" This gives the Forest officer the opening he is looking for, and he says, "No, not so far. Have been mighty lucky in having 'old timers' around who realize the damage done by fires and are careful. You can spot them every time. Now, I can see you are far from a green one in the woods from the way you handle your rod and line," or anything like that to flatter him. If he is an "old timer" he will admire your powers of observation; if he is not, he will be tickled to death to think that a Ranger, who is supposed to be the best of woodsmen,

could not spot him, and his chest will bulge out considerably. In either case the Ranger has pleased him, and the chances are one hundred to one he will have no trouble with that man starting a fire. On the other hand, suppose the fisherman does not give him an opening: in that case, the Ranger stops and says, "By the way, did you see any camp fires coming down the river?" The fisherman says "No." Then the Ranger, "I certainly would appreciate it if you would put out any you see burning. We have some people who come up here who are not used to the woods, and naturally do not realize the importance of putting out their fires or that a little spark from a cigarette or match is very dangerous." The Ranger has now warned the fisherman by pretending to be worried about others, and at the same time pleased him by pretending to think the chances of his being so careless are so remote that it is unnecessary to warn him. The same mode of procedure applies to hunters and campers. The Ranger can always bring the conversation around to his work, and, by a little tact and politeness, go away resting assured of the fisherman's, hunter's, or camper's cooperation.

Suppose he has come onto some campers: he walks in, not forgetting to be looking for smoke, and after the usual day's salutation sits down. After talking about things in general, he gradually brings the conversation around to cooking in the open. Most of them will have some opinion as to the best way. Of course, he will be supposed to give his ideas on the subject. He might say something like this: "Personally, I think a stone fireplace is the best. It makes a cracking place to cook on (all the time he is showing them how to make one), and if you bring along a piece of sheet iron to lay on the stones you will have a regular stove, or should you forget the sheet iron (the chances are they have none with them this time), you can easily make the fireplace narrow enough to rest your frying pans on the stones, and then, too, a fire of this kind is not so apt to start a forest fire." Then he has the conversation started on forest fires, having told them of the fireplaces, which is important. He now has them in a good state of mind, and their attention his, and he can tell them lots which ordinarily would go in one ear and out the other. I personally have tried these ways of inciting the interest of the users of the National Forests, and found they never failed to bring good results.

#### JACK LONDON'S OAK

**J**ACK LONDON'S memory is kept fresh in the minds of the people of his native city, Oakland, California, in a fitting manner. A sturdy oak tree, personifying the character of the famous author, has been planted on the plaza before the city hall. Here, surrounded by a fine lawn and with a beautiful building for a background, it occupies alone the most conspicuous place in the city. The dedicatory resolution of the City Council of Oakland expresses in words the esteem for the author, which the planting of the oak exemplifies.

*"A resolution of the Oakland city council, calling*

*memory of Oakland's author and dedicating the city's standard-bearing oak to his name—Jack London.*

*Proud his city that there came a lad who lived and grew to world's renown by striking chords that until his time had been unsung.*

*Sad our city that life for him, a narrow vale wherein he spoke and gave a radiance for all mankind; and that his life was short, a sacrifice for experiences that remain aglow for you and me.*



HOW OAKLAND'S OAK WAS TRANSPORTED

Having been excavated with the large ball of earth about its roots, this seventeen-year-old tree was carted from one section of Oakland to another and was successfully replanted.

*Glad that we can confer this mite of honor by dedicating Oakland's standard-bearing oak to him who grew with this city, that this sturdy sentinel may stand in memory and to honor Jack London."*

The moving of this seventeen-year-old tree from its birthplace in Mosswood Park to its new location was one of those feats of engineering which were considered impossible a few years ago. The transplanting of a tree is always difficult because the root system must be protected from drying-out and excessive cutting-back, if the tree is to live. One drying gust of wind on the small living root hairs may kill the tree. When a tree reaches a height of twenty-four feet and is thirteen inches through at the base, the magnitude of the task is easily imagined. A circular trench six feet deep and fifteen feet in diameter was dug around the base of the tree and the ball of earth about the roots was carefully boxed to prevent breaking and exposure of the roots. A big truck transported the tree to its new home, where it was successfully transplanted. The fact that the young tree withstood one of the heaviest windstorms the city has experienced in years, after being in its new home only two months, shows how well-chosen it is to typify the sturdy, rugged man, Jack London.

## NATIONAL PARK SERVICE ORGANIZED

**T**HE National Park Service, which was created by act of Congress in August, 1916, to administer the National Parks under one correlated system, has been organized under appropriations made in April. Secretary Lane has appointed as Director Mr. Stephen T. Mather,



STEPHEN T. MATHER

Director of the National Park Service who has done remarkable work in developing the parks.

who, to accept the place, resigned the office of Assistant to the Secretary of the Interior. Horace M. Albright becomes Assistant Director, and Frank W. Griffith, Chief Clerk of the new bureau.

Secretary Lane began the work of National Parks development, the success of which is insured by the organization of this new bureau, two and a half years ago. During this preliminary period much has been accomplished of importance to the cause. All National Parks have been opened to automobiles. New roads have been projected, of which many have been built and many improved. Coöperation in the public interest has been promoted between railroads and the Government, between concessioners and park managements, and between parks. Large private capital has been induced to enter several

National Parks for the enlargement and improvement of hotel and transportation service. Prices to the public have been decreased wherever possible.

New concessions have been made on a basis destined to make National Parks self-supporting under conditions of increased patronage, and several parks already have become self-supporting. Larger appropriations have been secured from Congress for road building and the perfecting of sanitary and other conditions. An extensive educational campaign has been inaugurated for the information of the people concerning the hitherto unknown quality and extent of their scenic and recreational possessions, under which public interest in our National Parks is growing with unanticipated speed; and public realization, interest and practical use is the condition as well as the object of National Parks development. Public patronage of the parks has increased rapidly and steadily.

These and many other beginnings point the way toward the system which it will be the object of the new Service to build and perfect.

Stephen T. Mather, the head of the Service, was formerly assistant to the secretary, in which office he had supervision of the National Parks, and, in addition, other Departmental work. He resigned that position to become Director of the National Park Service, in order that he might devote his entire time to the park work. He was born in California in 1867, and educated at the University of California. He then removed to New York and engaged in newspaper work. Later he entered the business of manufacturing borax and boracic acid as a member of the Thorkildsen-Mather Company, with offices in Chicago. He has devoted time, energy and his own money to National Park work and has been a remarkably successful official.

## E. A. STERLING'S NEW WORK

Mr. E. A. Sterling, a well-known forest engineer, who for the past two years has been manager of the Trade Extension Department of the National Lumber Manufacturers' Association, at Chicago, has resigned to become manager of the new eastern office of James B. Lacey & Co. This office, which will be in the Forty-second Street Building, New York City, will be opened about August 1. In connection with his new work Mr. Sterling will also take up some of his former consulting practice as part of the activities of the office of the Lacey Company. Mr. Sterling was for several years in the United States Forest Service, and later was a partner in the forest engineering firm of Clark, Lyford & Sterling, which has headquarters at Vancouver, B. C. Mr. Sterling had charge of the eastern section of the United States, with offices in Philadelphia. For several years Mr. Sterling has been a director and member of the executive committee of the American Forestry Association.



## AMERICAN FORESTRY MAGAZINE PRAISED

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"I want to voice my appreciation of your AMERICAN FORESTRY. It is always of great interest to us."

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"It would be hard to tell you how much we enjoy and profit by your publication. Yesterday a girl who is now in the Normal School said she read it each month. With the boys it is as popular as a magazine on Electricity, Autos or Mechanics, and one girl gave her report in an English Class on White Pine Blister Rust."

"The articles by Mark Daniels are a joy to any one who has visited the National Parks and a lure to any one who has not."

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"The magazine in its new form certainly deserves great praise."

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"After carefully going through your February number of AMERICAN FORESTRY, I cannot refrain from expressing my appreciation of its excellence. You have succeeded in building up an exceptional magazine and I trust that its success may continue."

THOMAS B. WYMAN, Director,  
Wyman's School of the Woods,  
Munising, Michigan.

"I read AMERICAN FORESTRY each month. It is doing such great good for our trees and forests and is always full of wonderful and beautiful scenes."

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GEORGE W. FISS,  
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"I wish to compliment you on the attractiveness of the magazine, and the manner in which it is being improved."

CHARLES A. HOAG,  
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"Your magazine has been coming regularly to this office for more than six months, and I look on it as one of the most informative and valuable magazines of the day."

M. G. CHAMPION,  
Public Parks Board,  
Winnipeg, Canada.

"I have received my certificate and magazine and am more than pleased and delighted to know of the great good you are doing."

F. J. DIXON,  
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"How well you do things in America! Your Forestry Magazine is a fine one, and your work most interesting and valuable."

DR. J. A. LEACH, Editor,  
The Emu,  
Omeo, Australia.

"A friend sent me a subscription to your magazine and I haven't had a present in years that has already given me as much pleasure, and just think of all the numbers still to come."

MRS. CHARLES G. CAROTHERS,  
Memphis, Tennessee.

"Permit me to make use of this opportunity to commend very highly the official publication of the American Forestry Association. It is worthy of all praise."

ROBERT S. WOODWARD,  
Washington, D. C.

"I am deeply interested in the conservation of our forests and it gives me a great deal of pleasure to be identified with an Association which is accomplishing such excellent results in this direction."

JOHN W. WEEKS,  
Washington, D. C.

"I have recently become a member of the American Forestry Association and I am reading your magazine with keen interest. It is very well gotten up and most excellently printed."

LEWIS EDWIN THEISS,  
Lewisburg, Pennsylvania.

## CANADIAN DEPARTMENT

### ELLWOOD WILSON, SECRETARY, CANADIAN SOCIETY OF FOREST ENGINEERS

The Report of the Forest Branch of British Columbia for 1916 is just out and is very interesting and shows what such work, properly conducted, can do for a country. Trade extension in wood products has been carefully studied and efforts made to increase the markets for and the consumption of timber. Heretofore southern pine has held the eastern Canadian market, but Douglas fir has been brought to the attention of architects, city building departments and other wood users and much very creditable advertising has been done. Exhibitions have also been held in many eastern cities. Mills are also put into touch with enquirers and possible customers. The Prairie Provinces have also been carefully canvassed and the same methods used to induce their people to use British Columbia timber as in the East. Foreign trade has also been carefully studied, but the difficulty of obtaining ships has greatly hampered the export trade. The British War Office has done considerable buying of boxes in British Columbia. The estimated value of the total lumber production for 1916 is \$35,528,000 and the total timber scaled amounted to 1,280,000,000 feet. B. M. logging operations increased and were carefully inspected; 1648 inspections were reported. Land classification work was carried on, 144 examinations being made. Manufacturing and export statistics were also collected and these showed that the pulp and paper industry has obtained a foothold, 65,229 tons of paper and 14,389 tons of sulfite wood-pulp being manufactured. Reconnaissance work had to be

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abandoned altogether as so many of the field force are absent at the front. Forest protection was carried on as in the past, but owing to shortage of men a less number were employed. The total damage estimated amounted to \$49,913.00, as against \$108,873.00 for 1915 and \$72,057.00 for 1914. The people are beginning to realize from the Forest Branch's campaign of education the necessity of care and are beginning to cooperate heartily. The report shows that the work is being kept up to the same high standard which was set when the work was started and with a strong personnel and good *esprit de corps* this will be continued.

The Manager of Eastern Lands of the Canadian Northern Railway has just returned from a trip through Northern Ontario and says that he believes that there are tributary to the present railways and waterways leading to them, 250,000,000 cords of spruce pulpwood in Ontario and 350,000,000 cords in Quebec. He says that it is useless to consider timber north of the Transcontinental Railway, as the rivers run north, and only a small portion could be brought upstream by building dams which would enable the wood to be towed back.

The campaign against the white pine blister rust is progressing under the Dominion and Provincial Governments. Subject to the general supervision of Dr. J. H. Grisdale, Acting Dominion Botanist, the field work is in charge of

W. A. McCubbin, of the Field Laboratory of Plant Pathology at St. Catharines, Ontario. A senior and two junior assistants are provided who will specialize in research work calculated to determine the best methods of control of the disease. The actual work of scouting for the disease and eradicating it will be done by men provided by the Forest Service of Ontario and Quebec, respectively. The salaries of these men will be paid by the Provinces and their traveling expenses by the Dominion. There will be twenty in Ontario and the same number in Quebec. Until June 10 the work of location and eradication will be confined to white pine; after that date similar work will be done on currants and gooseberries, the alternate hosts of the blister rust. Work is now under way of clearing both wild and cultivated currants and gooseberries from a strip a mile wide along the bank of the Niagara River, from Niagara-on-the-Lake to Fort Erie, to form a safety belt which will prevent the disease from passing over the river into New York State. On the New York side of the river, similar work will be done by the state for the protection of Ontario. Pine in this territory on both sides of the river will be dealt with later, if necessary. In connection with the location of the disease on currants and gooseberries, it is proposed to utilize the services of school children. The stage of the dis-

ease on these plants is easily recognized and the pupils will be able to render a valuable public service by reporting any outbreaks found. Literature and colored illustrations will be furnished and instructions given through the teachers.

The necessity for uniform statistics of forest fires and the damage caused by them is a subject of great importance and likewise of considerable difficulty. It would seem to be necessary to have, whenever a fire occurs, the date, location, cause, area burned over, stand before the fire occurred, timber which can be salvaged, and timber burned. Value of timber or other resource destroyed is also important. The last three items are very difficult to ascertain. Protective agencies cannot be expected in the nature of the case to cruise and accurately determine the amount of timber on areas under their care. The ordinary fire ranger is certainly not qualified nor has he the time to make a careful estimate of the amount of timber which can be salvaged, nor the value of the trees destroyed. At best the most he can say is: green timber destroyed, or old burn, or logging slash or some such general description, and he can say timber scorched but fit to cut, timber all burnt, etc., and none of these designations are of any real value for statistical purposes. In fact, the determination of areas is really often beyond the capacity of the ranger, and again the difficulty of leaving

his patrol to measure burnt areas crops up. Then when the question of valuing such damaged areas is encountered, further difficulties enter. Only an expert in local values is competent to say what timber is worth. The question of the value of young growth, of scorched timber and of areas which have just started to reproduce is a trying one and no two owners will agree as to the value placed on such areas. Much preliminary work is necessary, especially in country which has not even been carefully mapped, such as all of the Canadian Coöperative Associations are operating in. It might be possible for these Associations to undertake such mapping and estimating work. This would give winter work for rangers and inspectors, a very important matter indeed.

Forest fires are said to be raging in the organized and unorganized districts around Fort William and Port Arthur in Ontario, destroying large areas of timber and uncut pulpwood. Bush fires have been raging in fully a hundred sections west of Fort William since last week and much territory near Commee and beyond has been burnt.

Professor W. N. Millar, of the University of Toronto, has gone to the United States to help organize a Forestry Corps for work in England. This leaves only Drs. Fernow and Howe on the teaching staff of the Forestry School.

Dr. Howe, who is making studies of cut-over lands and the reproduction of pulpwood on them for the Commission of Conservation, has returned from a two weeks' reconnaissance trip north of Grand Mere, which he took in order to plan out his summer's work.

The Minister of Lands and Forests has sent out a circular letter to all licensees of timber lands in the Province of Quebec urging them to join the coöperative fire protective associations and warning them that if they do not he will enforce to the limit the requirements and penalties of the forest-fire laws. Practically all of the limit holders have joined. The notable exceptions are owners who from their standing and prominence should be more public spirited and should know better where their interest lies.

The summer meeting of the Technical Section of the Pulp and Paper Association will consist of a trip to the industrial centres of the St. Maurice Valley, where the large paper mills, water power installations, carbide and aluminum works will be visited. The members will leave Montreal on a special train of two sleepers and a diner and will be the guests of the Laurentide, Belgo-Canadian and St. Maurice Paper Companies.

The inquiry being held by the Canadian Government into the cost of producing newsprint paper is progressing slowly, and meanwhile the price fixed by the Government is still being charged by the producers. The prices of wood, wages and supplies are still rising.

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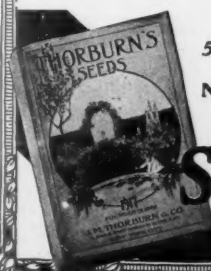
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Further information may be had by applying to the Department of Lands and Forests.

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"THE WOOD ETERNAL"

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## "Tide-water" Cypress

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(From the "Lumber World Review," May 10th, 1917.)

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"It was not long thereafter until the mills of the Southern Cypress Manufacturers' Association were working to capacity to fill the orders for cypress which after more or less neglect had again come into its own.

"And then followed what usually follows any marked success in merchandising in these days of intensive buying and selling. Inferior, or upland, cypress (and some carelessly manufactured cypress) began to share unduly in the results of public faith, and it became necessary to protect the lay consumer and at the same time protect the conscientious manufacturer and the honorable and up-to-date preponderance of retailers.

"The general public was not aware that there was a considerable difference between 'tide-water' cypress and the cypress that grew too far inland—but experience began to teach them that while one was 'eternal' the other was more or less temporal and 'fleeting.' One was truly rot-resisting

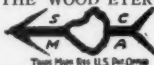
while the other failed to justify the confidence of the user in its rot-defying character.

"So the already famous cypress arrow trade-mark was devised as an insurance policy for both seller and user. The value of a trade-mark need not be dwelt upon. The manufacturer who won't sign his product will never get very far with it, in these days. The quality must be maintained if the product is to survive the fierce battle of business.

"And so now genuine 'tide-water' cypress (the most eternal of the Wood Eternal) is no longer bought by name alone or on faith—but by a brand back of which is a group of manufacturers including most of the larger and more responsible producers of cypress. As a further testimony of 'pride in their product,' the output of each mill is being identified by the serial number of that mill incorporated in the trade-mark as applied to each mill. The move is one in the right direction, the most important one ever taken by any lumber manufacturers, and is more than justifying, even this early, the well-known cypress slogan which recites that 'the only permanent safety for the seller is perpetual safety for the buyer.' This is the keynote.

"RETAILERS ARE ALREADY EXTENSIVELY REFUSING TO BUY 'ANONYMOUS CYPRESS,' AND ARE SHOWING THEIR UP-TO-THE-MINUTE ACUMEN BY SPECIFYING THE TRADE-MARK ON ALL THEIR CYPRESS ORDERS. THIS IS THE MARK WHICH IS NOW STAMPED ON THE TIDE-WATER CYPRESS—(THE 'WOOD ETERNAL')—MANUFACTURED BY THE ASSOCIATION MILLS.

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